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SYDNEY: SATURDAY, JULY 9, 1927.

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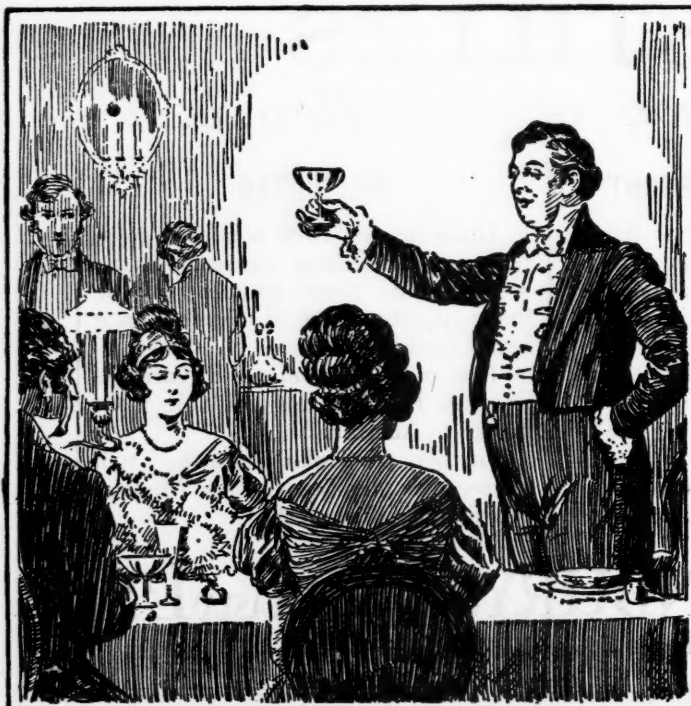
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PUERPERAL AND ABORTION SEPSIS.¹

By EDWARD R. WHITE, M.D.,
Honorary Surgeon, Women's Hospital,
Melbourne.

DURING the year 1926 seventy patients suffering from puerperal sepsis and two hundred and eighty-five patients suffering from abortion sepsis were admitted into the Women's Hospital, Melbourne, and came under my observation.

BACTERIOLOGICAL EXAMINATIONS.

A bacteriological examination was made in fifty-three consecutive cases, which were mainly mild localized infections, a few were serious and there were three cases of acute septicaemia; in addition there were several of sapraemia, mostly of a mild type.

Smears and cultures were taken from the cervix and also from inside the cavity of the uterus.

Technique.

Each patient was placed in the lithotomy position, Sim's speculum was then inserted so that the *cervix uteri* was exposed without being touched and smears and cultures were taken from the posterior lip close to the *os*. The cervix was then seized by a volsellum and carefully cleaned with sterile wool. Then the apparatus for taking an intrauterine swabbing was used. This consisted of an outer glass tube in which was inserted an inner glass tube and within this tube again was placed a woollen swab, mounted on platinum wire. The outer glass tube was inserted beyond the internal *os*, the inner tube was then pushed further in and the woollen swab was inserted further in again and a swab taken. The withdrawal took place in the reverse order, so as to prevent the swab from being contaminated by touching the cervical canal.

TABLE I.

SHOWING ORGANISMS FOUND IN SWABBINGS FROM CERVIX AND CAVITY OF UTERUS.

Organisms.	Number of Cases.	Percentage.
Streptococci	24	45
Gonococci	5	9
<i>Staphylococcus aureus</i>	2	..
<i>Bacillus coli communis</i>	2	..
<i>Bacillus welchii</i>	1	..

¹ Read at a meeting of the Victorian Branch of the British Medical Association on May 4, 1927.

TABLE II.—SHOWING OCCURRENCE OF GROUPS OF STREPTOCOCCI IN SIXTEEN PUERPERAL CASES AND THIRTY-SEVEN ABORTION CASES.

Organism.	Puerperal Cases.	Abortion Cases.	Total.	Percentage.
Hæmolytic streptococcus	4	3	7	13
Non-hæmolytic <i>Streptococcus viridans</i>	4	11	15	28
Non-hæmolytic colourless streptococci	1	1	2	4
Total	9	15	24	45

Organisms Found.

The organisms found are tabulated in Table I. Streptococci were found both within and without the uterus in twenty-four cases or 45%.

In addition other familiar and common pathogenic or disease producing organisms were noted: Gonococci in five cases or 9%, *Staphylococcus aureus* in two cases, coliform bacilli in two cases and *Bacillus welchii* (*Bacillus aerogenes capsulatus*) in one case. In most instances the presence of gonococci was unsuspected. A particularly interesting observation was that in two cases gonococci were found inside the uterus, but not on the cervix. When can it ever be stated that a patient is free from gonorrhœa, even though none be found on smears from urethra, vaginal fornix and cervix.

Saprophytes or non-pathogenic organisms, both extrauterine and intrauterine, were also found in most cases.

Streptococci.

We have used Holman's⁽¹⁾ classification, slightly modified, as a basis for grouping streptococci.

Group I: Hæmolytic Streptococci.—Hæmolytic streptococci are usually pathogenic and are often found in acute septic infections, puerperal or otherwise. By means of their reaction on certain sugars this group is further divided by Holman into *Streptococcus pyogenes* (the best known), *Streptococcus equi*, *Streptococcus infrequens* and others.

Group II: Non-Hæmolytic Streptococci.—The group of non-hæmolytic streptococci includes *Streptococcus viridans* and colourless streptococci. *Streptococcus viridans* or the green streptococcus may or may not be pathogenic; examples of these are *Streptococcus faecalis*, *Streptococcus salivarius*, *Streptococcus mitis*, *Streptococcus ignavus* and others.

Colourless streptococci include the enterococcus, a large oval coccus occurring in pairs or short chains and found in fæces. It is a harmless saprophyte, but may become slightly pathogenic.

Table II shows how these groups occurred.

Streptococci were found both within and without the uterus in twenty-four cases or 45%.

Relationship of Severe Sepsis and Hæmolytic Streptococci.

The results of blood culture in twenty cases of septicaemia are shown in Table III.

In the acute blood infections hæmolytic streptococci are almost universal, occurring in 85% of our cases.

TABLE III.
SHOWING RESULTS OF BLOOD CULTURE IN TWENTY CASES
OF SEPTICÆMIA.

Organism.	Number of Cases in which Organism was Grown in Culture.
<i>Streptococcus hæmolyticus</i>	16
<i>Streptococcus hæmolyticus</i> and <i>Bacillus</i> ..	1
<i>Streptococcus viridans</i>	1
<i>Staphylococcus aureus</i>	1
<i>Bacillus coli communis</i>	1

Severe Local Sepsis.

There were thirteen cases in which hæmolytic streptococci appeared within and without the uterus seven times or 55%.

Mild Local Sepsis.

The second group, *Streptococcus viridans*, was found in fifteen cases or 28%, showing that these organisms were definitely pathogenic, but milder in degree, though in one case of septicæmia *Streptococcus viridans* was found on blood culture, as well as locally on the cervix and inside the uterus.

Conclusion.

It is seen therefore that hæmolytic streptococci are almost invariably present in septicæmia and in most cases of severe local sepsis.

Sapræmia.

In twenty-five cases of sapræmia, mostly of a mild type, pathogenic organisms, commonly *Streptococcus viridans*, were found within the uterus and on the cervix in nine cases or 36%. This is shown in Table IV.

TABLE IV.
SHOWING ORGANISMS FOUND ON THE CERVIX AND IN THE
UTERUS IN TWENTY-FIVE CASES OF SAPRÆMIA.

Organism.	Number of Puerperal Cases.	Number of Abortion Cases.	Total.
<i>Streptococcus hæmolyticus</i> and <i>Bacillus coli</i> ..	—	1	1
<i>Streptococcus viridans</i>	2	4	6
<i>Streptococcus viridans</i> and <i>Bacillus coli</i> ..	—	1	1
<i>Gonococci</i>	—	1	1
<i>Saprophytes</i>	4	12	16

Normal Pregnancy and Streptococci.

A good deal of attention has been recently directed to the subject of normal pregnancy and streptococci.

At Rotunda, FitzGibbon and Bigger⁽²⁾ found streptococci (*viridans*) *ante partum* in the vagina in 68% of normal cases and in the *post partum* uterus in 20%. These were regarded as the normal flora of the part.

Lockhart⁽³⁾ at Saint Thomas's Hospital found streptococci in 50% of normal cases *ante partum*; 19% of the patients developed pyrexia during the puerperium; of the non-infected patients (streptococci absent *ante partum*) only 2% developed pyrexia *post partum*. If the labour was abnormal and if vaginal examinations had been made, pyrexia

during the puerperium was increased threefold. Hæmolytic streptococci were found only once *ante partum* and *post partum*, but were later found in abundance when the temperature began to rise. We have carried out intrauterine examinations on a small number of normal patients during the (i) last month of pregnancy, (ii) first stage of labour, (iii) second and seventh day *post partum*. Already *Staphylococcus aureus* was found antenatally in one case and in another gonococci. Hæmolytic streptococci were present throughout in a third woman who ran a normal course.

Conclusion.

1. Non-hæmolytic streptococci (*viridans* group) are commonly present in the genital tract of normal patients both *ante* and *post partum* and they can cause local puerperal sepsis (28% of my cases).

2. This is definitely an endogenous infection.

3. Severe puerperal sepsis is caused mainly by hæmolytic streptococci which are seldom found *ante partum*, and this must be regarded as an exogenous infection.

Entrance of Streptococci into Vagina Before Delivery.

How do hæmolytic streptococci gain entrance into the vagina before delivery? It has already been noted that hæmolytic streptococci are only rarely found in normal cases *ante partum* (one case of Lockhart's and one of mine, in a small and incomplete series) and yet it is probably within the experience of us all to have observed a healthy mother, delivered easily by the natural forces, with not a single vaginal examination, who has become affected by severe local sepsis or even septicæmia. Surely a virulent hæmolytic streptococcus must have been present *ante partum* in such a case; there is some evidence to support such an endogenous infection by hæmolytic organisms.

1. In cases of chronic gonorrhœa, streptococci often appear as a secondary infection in the vagina.

2. In *multiparæ* with previous lacerations and erosions of the cervix there is commonly a leucorrhœa due to streptococci.

3. Coitus late in pregnancy may be a cause. It has been stated that 50% of men harbour streptococci under the prepuce. Lockhart found that the mean average time since the last coitus was thirty-two days in his patients with infection *ante partum*; but in the non-infected patients the mean average time was sixty days. Therefore, suitable advice should be given to all patients seen *ante partum*.

4. According to the mutation theory of Rosenow⁽⁴⁾ non-hæmolytic streptococci, which appear to be part of the normal flora of the vagina, may transform under a suitable environment into a virulent hæmolytic variety. I must confess that I have long had the idea after close clinical observation of many cases of puerperal sepsis that some such change may occur. But I can get no bacteriologist to agree to it without more evidence. Lockhart, however, has shown that a hæmolytic streptococcus becomes non-hæmolytic and again hæmolytic under suitable subculturing. I have already pointed out above that

mild sepsis is often due to a non-hæmolytic streptococcus, so commonly present in the vagina *ante partum*. Under suitable environment this may "regain" its hæmolytic and pathogenic qualities, with a resultant exacerbation into a serious local infection such as pelvic cellulitis or pelvic peritonitis or even into a general septicæmia.

5. Endogenous infection may also be due to blood-borne organisms from distant septic foci, such as teeth, tonsils, antrum or from contiguous disease, such as appendicitis, pyosalpinx and pyeloureteritis.

But as Bourne⁽⁵⁾ points out, puerperal sepsis is not merely due to the presence of streptococci or other organisms in the vagina before or after labour, but also to the soil on which they are planted or in other words to the local and general resistance of the patient. Of course, it is well known how such resistance is lowered by severe hæmorrhage, exhaustion and the toxæmias.

Conclusion.

An endogenous infection by hæmolytic streptococci may cause puerperal sepsis in association with the following: chronic gonorrhœa, erosion *cervici*, recent coitus, blood-borne infection from an extragenital focus or in the manner described in the mutation theory.

Summary.

1. Non-hæmolytic streptococci (*viridans* groups) are commonly present in the genital tract in normal cases both *ante* and *post partum* and they can cause local puerperal sepsis (28% of my cases).

2. This is definitely an endogenous infection.

3. Severe puerperal sepsis is mainly caused by hæmolytic streptococci, which are seldom found *ante partum*, and this must be regarded as an exogenous infection.

4. An endogenous infection by hæmolytic streptococci may cause puerperal sepsis in association with gonorrhœa, erosion of the cervix, recent coitus, blood-borne infection from an extragenital focus or in the manner described in the mutation theory.

5. Gonococci, though absent from the cervix, may sometimes be found within the cavity of the uterus (two cases).

TREATMENT.

In considering the treatment of puerperal sepsis, prophylaxis should occupy the most important place. As De Lee⁽⁶⁾ points out, so much can be done by prevention and so little by treatment, that our efforts must continue to be concentrated on asepsis and on a physiological conduct of labour. Prevent exhaustion and loss of blood and you do a great deal to prevent infection. Beckwith Whitehouse⁽⁷⁾ truly states that puerperal sepsis depends upon tissue damage and hæmorrhage.

Non-Interference.

Treatment may be summed up in the words non-interference. Moreover, good nursing, fresh air, a generous diet and postural treatment to drain the uterus naturally, will largely help in every case.

The Leucocytic Barrier.

The whole parturient canal can be regarded as a wounded surface after delivery. Under the necrosing

decidua, a definite leucocytosis occurs, the so-called leucocytic barrier; this, with the antibodies brought by the blood and distributed through the tissues by the serum and lymph, forms Nature's great defence against bacterial invasion.

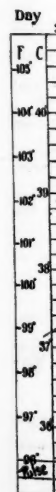
Local Treatment.

Irrigation and disinfection of the uterine cavity in puerperal sepsis are inefficient, because the invading organisms are out of reach within a few minutes. A. Fleming⁽⁸⁾ has demonstrated that any familiar antiseptic, strong enough to kill organisms, impairs or absolutely inhibits the bactericidal functions of the blood, particularly that of the leucocytes; therefore, the chief action of antiseptics within the cavity of the uterus is to paralyse the defending leucocytes. I know that it is so tempting to be "doing something" in cases of acute sepsis; but often the uterus is macroscopically quite clean and empty, with the infection long ago out of reach within its tissues or even further afield. In a case of sapræmia often with a bulky uterus and a heavy profuse lochia it does seem tempting to give an intrauterine saline douche in the hope of washing out fragments of placenta and membranes and blood clot which are foreign bodies harbouring saprophytes and even pathogenic organisms living a saprophytic existence. But there is always the risk of carrying infection higher up the parturient canal, even into the peritoneal cavity; protective blood clots, closing the uterine sinuses, may also be dislodged. But such a patient with sapræmia gets better and quickly too, if left alone; place her in a low Fowler's position with frequent turning about in bed in order to drain the uterus which is also stimulated to contract and involute by the oral administration of quinine, ergot and strychnine.

At the Women's Hospital, Melbourne, there are nearly three thousand childbirths *per annum*, with an average morbidity rate, according to the British Medical Association standard of 9.5%. Patients with pyrexia were treated entirely along conservative lines and only three became affected by septicæmia and yielded organisms on blood cultures; two of them recovered. A sick woman, particularly with a torn perineum, resents any manipulation, even an intrauterine douche. Therefore, if such interference does little or no good, but possibly harm, let her alone.

Swabbing out the uterus, curette or digital removal and curettage are other methods of local treatment, much too frequently employed. Any of these methods is liable to produce harmful and even disastrous results. There is always the risk of carrying infection upwards from the vagina, protective blood clot may be disturbed, leaving the sinuses exposed and the leucocytic barrier may be grossly mangled by the curette. Curettage is particularly harmful and dangerous, because it is indeed raking up the soil after sowing it with the seed. I have seen so many innocent sapræmic and mild septic conditions from which the patients would have quickly recovered if only left alone converted into acute local sepsis, such as pelvic cellulitis or peritonitis with weeks or months of serious illness or

even fatal.
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even lighted up into a septicæmia with a rapidly fatal ending.

We have already noticed that in twenty-five cases of sapræmia, mostly of a mild type, pathogenic organisms were found within the cavity of the uterus in nine cases or 36% (see Table IV). Intra-uterine interference, particularly raking with a curette the soil so well sown, might easily stir up serious trouble in any of these cases. Many patients with severe local abortion sepsis are admitted every month; the uterus has been curetted without doubt whilst the patient was in a state of pyrexia or sapræmia. Some of our patients suffering from the gravest form of septicæmia have been admitted with a history of douching, "gentle curettage" and so on. Three patients with abortion sapræmia were submitted to curettage when they had temperatures of 37.4° and 37.6° C. (99.4° and 99.8° F.) and promptly became acutely ill with septicæmia. The accompanying chart of one of these patients is both interesting and instructive (case 13 D.N.).

This patient was admitted suffering from a clean (non-infected) incomplete abortion. The temperature rose to 37.4° C. (99.4° F.) indicating a mild sapræmia; on account of hæmorrhage, a light curettage was carefully done. The patient rapidly became acutely ill with septicæmia, hæmolytic streptococci being grown on blood culture. This case will be further discussed later on. Therefore, exploration of the uterus in a case of pyrexia can be a dangerous procedure and should not be done except for hæmorrhage. Any pus collection must, of course, be evacuated by the easiest and most accessible method, such as by posterior colpotomy.

1. In puerperal sepsis and sapræmia with free hæmorrhage give local stimulatory treatment, that is quinine, ergot and strychnine by mouth and pituitrin by hypodermic injection; if this be ineffective, then explore the *cavum uteri* with the finger and if necessary pack the uterus.

2. In abortion sepsis and sapræmia with free hæmorrhage try local stimulatory treatment first;

if this be ineffective, then gently clean out and empty the uterus by the finger and if possible avoid the curette.

3. In incomplete abortion with pyrexia (generally sapræmia), if the temperature is 37.4° C. (99.4° F.) or over, do not curette; let Nature empty the uterus aided by stimulatory or "hurry up" treatment. But after the temperature has subsided for five days, the uterus may then be emptied, preferably by the finger.

Conclusion.

Intrauterine treatment in puerperal and abortion sepsis and sapræmia is contraindicated except for hæmorrhage.

General Treatment.

General treatment may be undertaken by immunological methods which aim at increasing the patient's natural powers of resistance by (i) active or vaccine therapy or by (ii) passive or serum therapy and blood transfusion.

Vaccines.

In local sepsis autogenous vaccines may do good and I have found them useful in protracted, chronic cases. In septicæmia vaccines in my experience are useless; it is hard to follow the rationale of injecting dead organisms into a blood stream already full of living microbes.

Serum.

In severe local sepsis and septicæmia the condition of the patient calls for immediate help in the form of serum, well loaded with antibodies and antitoxins. We have given normal horse serum, antidiphtheritic serum and for many years polyvalent antistreptococcal serum, prepared at frequent intervals by the Commonwealth Serum Laboratories from several strains of hæmolytic streptococci, obtained from patients with puerperal septicæmia. We use this serum prophylactically in all obstetrical cases requiring much manipulation and therapeutically in all cases of pyrexia. We have given

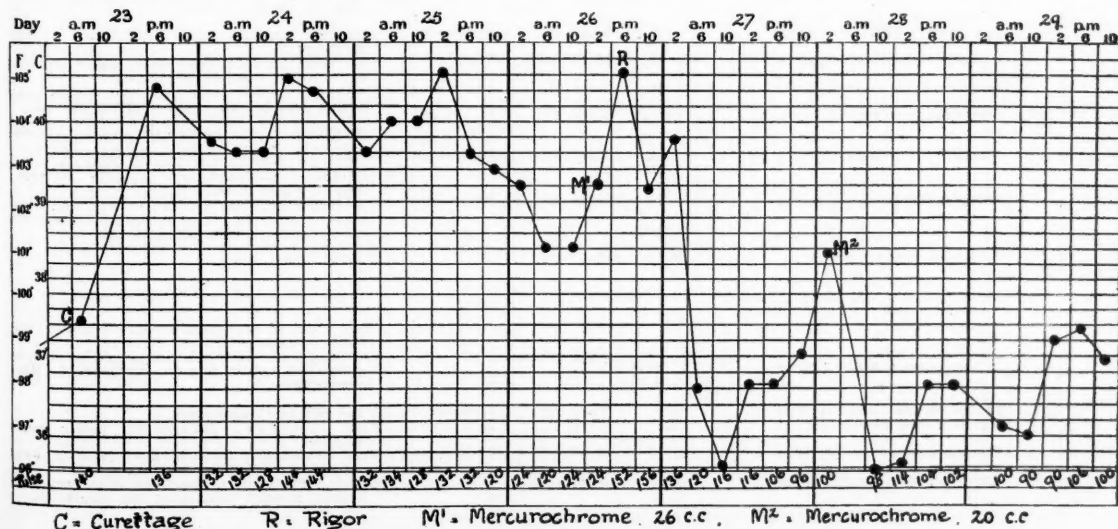


Chart of Patient with Septicæmia Showing Result of Treatment with Mercurochrome.

TABLE V.—SHOWING ANALYSIS OF RESULTS IN NINETEEN CASES OF SEPTICÆMIA.

Nature of Case.	Recovered.		Died.		Total Number.
	Number	Percentage.	Number	Percentage.	
Puerperal Abortion	5 6	50 67	5 3	50 33	10 9
Total	11	58	8	42	19

small and large amounts intramuscularly and intravenously, even one hundred and two hundred cubic centimetres every day for several days. I cannot say that I have seen any definite improvement in a single case. It is hoped to investigate this serum problem further this year.

Blood Transfusion.

In acute sepsis the blood of the patient loses the power of response to an infection by the production of antibacterial substances; its leucocytes, though

increased in number, are paralysed. Therefore the transfusion of a highly active whole blood should help. Our war experience taught us that transfusion was useful in septic conditions; it has been particularly helpful in some of our severe and protracted cases.

Immuno-transfusion consists in the injection of a donor's blood whose resistance has been previously stimulated and exalted by a vaccine. An autogenous vaccine or, as Colebrook and Storer⁽⁹⁾ have pointed out, a stock vaccine can be given to the donor four

APPENDIX A.

THE FOLLOWING IS AN ANALYSIS OF TWENTY CASES OF SEPTICÆMIA. CASES 1 TO 10 ARE PUERPERAL AND CASES 11 TO 20 ARE ABORTION SEPTICÆMIA.

Case Number.	Organism Found on Blood Culture.	Dose of "Mercurochrome" in Cubic Centimetres.	Condition on Admission.	Result.	Remarks.
1	<i>Streptococcus hæmolyticus</i> ..	22	Moribund ..	Died ..	Confined outside; general peritonitis; died three days after admission.
2	<i>Streptococcus hæmolyticus</i> ..	22, 22	Moribund ..	Died ..	Confined outside six days ago; instrumental delivery; died in three days.
3	<i>Streptococcus hæmolyticus</i> ..	22	Moribund ..	Died ..	Confined outside five days ago; general peritonitis; died in two days; streptococci in peritoneal fluid.
4	<i>Streptococcus hæmolyticus</i> ..	22, 20	Very ill ..	Recovered ..	Confined in Women's Hospital; normal labour; empyæma and rib resection.
5	<i>Diplococcus</i> ..	23, 22	Very ill ..	Recovered ..	Confined by midwife outside seven days ago; numerous abscesses and streptococci in pus.
6	<i>Streptococcus hæmolyticus</i> ..	23, 23	Very ill ..	Recovered ..	Pyelitis; confined in Women's Hospital; dystocla.
7	<i>Streptococcus hæmolyticus</i> ..	20, 15	Very ill ..	Died ..	Confined in Women's Hospital; forceps; Bartholin's abscess; erysipelas of face; died in three weeks.
8	<i>Streptococcus hæmolyticus</i> , also on cervix and intrauterine ..	15, 22	Very ill ..	Recovered ..	Confined outside two days ago; normal delivery.
9	<i>Streptococcus hæmolyticus</i> ..	15, 15	Moribund ..	Died ..	Confined outside five days ago; general peritonitis; died in six days.
10	<i>Streptococcus hæmolyticus</i> ..	23, 30	Very ill ..	Recovered ..	Confined outside normally five weeks ago; coitus just before onset of acute illness.
11	<i>Streptococcus hæmolyticus</i> ..	30	Very ill ..	Recovered ..	Lung abscess and rib resection; blood transfusion, 450 cubic centimetres (fifteen ounces); fever for nine weeks; rigors.
12	<i>Streptococcus hæmolyticus</i> ..	23, 15	Very ill ..	Recovered ..	Curettage for hæmorrhage; broncho-pneumonia; endocarditis; splenic infarct; febrile eight weeks.
13	<i>Streptococcus hæmolyticus</i> ..	23, 30	Very ill ..	Recovered ..	Curettage at 37.4° C. (99.4° F.) and then became very ill; panophthalmitis; left eye eviscerated; streptococci in pus.
14	<i>Staphylococcus aureus</i> ..	26, 20 (Sudden fall of temperature).	Moribund ..	Died ..	Died in three days.
15	<i>Streptococcus viridans</i> (salivarius), also in cervix and intrauterine ..	30	Moribund ..	Died ..	Died in three days.
16	<i>Bacillus welchii</i> ..	18	Ill ..	Recovered ..	Only case of septicæmia due to non-hæmolytic streptococci.
17	<i>Streptococcus hæmolyticus</i> ..	20, 30	Very ill ..	Died ..	Curettage at 37.6° C. (99.8° F.); intense ulcerative colitis due to overdose of "Mercurochrome."
18	<i>Bacillus coli communis</i> ..	30, 25 of 2% solution.	Very ill ..	Recovered ..	Pyæmia; local abscesses.
19	<i>Streptococcus hæmolyticus</i> ..	20	Very ill ..	Recovered ..	Foul discharge; jaundiced; pelvic peritonitis.
20	<i>Streptococcus hæmolyticus</i> ..	23	Moribund ..	Died ..	Foul discharge; erysipelas of face; general peritonitis; died in four days.
20 ¹	<i>Streptococcus hæmolyticus</i> ..	20, 20	Moribund ..	Died ..	General Peritonitis; died within twenty-four hours; special treatment not available.

¹ Case 20, L.M., admitted moribund and died within twenty-four hours, was omitted from the mortality list.

hours before transfusion. This form of therapy strongly appeals to me, but on account of the difficulty of obtaining suitable donors, we decided to try out another method of treatment which would be simpler and more readily available to anyone.

Blood Chemical Therapy.

The Use of Mercurochrome.—The antiseptic, mercurochrome, is injected intravenously in order to kill any organisms in the blood stream and so convert a septicæmia (bacillæmia) with a grave prognosis into a condition of local sepsis with a much better outlook.

Young, Hill and Scott,⁽¹⁰⁾ of Baltimore, have produced such an antiseptic in mercurochrome—220 soluble. This is an acid dye called dibrom-fluorescein, linked to a mercury molecule and contains 26% of mercury. The combination is called dibromoxymercuryfluorescein or mercurochrome—220 soluble.

Dose.

A 1% solution is given intravenously in doses of fifteen to thirty cubic centimetres, varying according to the body weight; five milligrammes are given per kilogram of body weight or 22.7 cubic centimetres of the 1% solution per forty-five kilograms (one hundred pounds) body weight. For convenience we make the drug up into packets of 0.24 gramme (four grains) each and dissolve one packet in 28.4 cubic centimetres (one ounce) of freshly distilled, tepid water, which gives a 1% solution. The

injection may be repeated every second day until blood culture yields no growth of organisms.

Technique.

The following routine is carried out at the Women's Hospital. A fine needle, fitted to a twenty cubic centimetres "Record" syringe, is plunged subcutaneously into the median cephalic vein at the bend of the elbow and ten cubic centimetres of blood are withdrawn for blood culture and blood urea examinations. Then twenty cubic centimetres of normal saline solution are given intravenously, followed by fifteen to thirty cubic centimetres of mercurochrome; a further three hundred to five hundred cubic centimetres of normal saline solution or 10% glucose and saline solution are transfused. One cubic centimetre of adrenalin solution, one in one thousand is then given hypodermically; if the rigor is severe, 0.5 cubic centimetre of pituitrin is also injected. Magnesium sulphate in doses of sixteen grammes (four drachms) or castor oil in doses of sixteen cubic centimetres (four fluid drachms) is given by mouth half an hour before the mercurochrome.

Reaction.

The injection is followed by a rigor of varying intensity in half an hour to four hours, with a rise in temperature of 1.5° to 3° C. (3° to 5° F.); the temperature of one of my patients rose to 42° C. (107.6° F.) on two occasions. The temperature then falls and a varying improvement in the patient

APPENDIX B.

THE RESULTS OF BACTERIOLOGICAL EXAMINATIONS IN FIFTY-THREE CONSECUTIVE CASES OF SEPSIS ARE SHOWN IN THE FOLLOWING TABLE. CASES 1 TO 16 ARE PUERPERAL AND CASES 17 TO 53 ARE ABORTION SEPSIS.

Case Number.	Disease.	Organisms on Cervix.	Intrauterine Organisms.	Remarks.
1	Pelvic cellulitis	Not taken	Non-hæmolytic <i>Streptococcus viridans</i>	Confined eleven days ago; manual removal.
2	Endometritis	Anaerobic streptococci, non-hæmolytic <i>Streptococcus viridans</i>	Anaerobic streptococci, non-hæmolytic <i>Streptococcus viridans</i>	Confined thirteen days ago.
3	Pelvic cellulitis, pyelitis	Non-hæmolytic <i>Streptococcus viridans</i>	Non-hæmolytic <i>Streptococcus viridans</i>	Confined sixteen days ago.
4	Sapremia	Non-hæmolytic <i>Streptococcus viridans</i>	Saprophytes	Confined twenty-one days ago.
5	Endometritis	Nil	Gonococci	Confined weeks ago. Note absence of gonococci from cervix.
6	Sapremia	Saprophytes	Saprophytes	Confined eight days ago.
7	Septicæmia, convalescent	Saprophytes	Nil	Confined weeks ago.
8	Pelvic cellulitis	<i>Streptococcus hæmolyticus</i> , <i>Bacillus coli communis</i>	<i>Streptococcus hæmolyticus</i>	Confined six days ago.
9	<i>Phlegmasia alba dolens</i>	<i>Streptococcus hæmolyticus</i> (<i>pyogenes</i>), <i>Staphylococcus aureus</i>	<i>Streptococcus hæmolyticus</i> (<i>Pyogenes</i>)	Confined twelve days ago; very ill; recovered.
10	Pelvic cellulitis	Saprophytes	Saprophytes	Confined eight days ago; blood culture yielded no growth.
11	Pelvic cellulitis	<i>Streptococcus hæmolyticus</i> (<i>pyogenes</i>)	<i>Streptococcus hæmolyticus</i> (<i>Pyogenes</i>)	Confined five days ago; blood culture yielded no organism; very ill; mercurochrome given twice; recovered.
12	Sapremia	Saprophytes	Saprophytes	Confined fifteen days ago; courage for hæmorrhage; blood cultures yielded no growth; mercurochrome; recovery.
13	Sapremia	Saprophytes	Saprophytes	Confined thirty days ago.
14	Septicæmia	<i>Streptococcus hæmolyticus</i>	<i>Streptococcus hæmolyticus</i>	Confined four days ago; blood culture yielded <i>Streptococcus hæmolyticus</i> ; mercurochrome; recovery.
15	Pelvic peritonitis	Non-hæmolytic streptococci	Non-hæmolytic streptococci	Difficult forcéps; manual removal; solid albumin; blood culture yielded no growth.
16	Sapremia	Saprophytes	Saprophytes	Confined seven days ago; post partum hæmorrhage; manual removal.

APPENDIX B.—Continued.

Case Number.	Disease.	Organisms on Cervix.	Intrauterine.	Remarks.
17	Endometritis	Not taken	Gonococci	
18	Endometritis	Saprophytes	Hæmolytic <i>Staphylococcus albus</i>	
19	Sapremia	Non-hæmolytic <i>Streptococcus viridans</i> (salivarius)	Non-hæmolytic <i>Streptococcus viridans</i> (salivarius)	
20	Sapremia	Gonococci	Gonococci	
21	Pelvic cellulitis	Saprophytes	Saprophytes	
22	Sapremia	Saprophytes	Saprophytes	
23	Sapremia	Saprophytes	Saprophytes	
24	Endometritis	Non-hæmolytic streptococci	Saprophytes	
25	Endometritis	Non-hæmolytic <i>Streptococcus viridans</i> (Ignavus)	<i>Bacillus welchii</i>	
26	General peritonitis	Non-hæmolytic <i>Streptococcus viridans</i>	Non-hæmolytic <i>Streptococcus viridans</i> (mitis)	Blood culture yielded no growth; mercurochrome; death.
27	Sapremia	Saprophytes	Saprophytes	
28	Uterine thrombosis	Non-hæmolytic (colourless) streptococci	Non-hæmolytic (colourless) streptococci	Very ill; blood culture yielded no growth; mercurochrome; recovery.
29	Sapremia	Saprophytes	Saprophytes	
30	Sapremia	Saprophytes	<i>Staphylococcus albus</i>	
31	Endometritis	Non-hæmolytic <i>Streptococcus viridans</i> (Ignavus)	Non-hæmolytic <i>Streptococcus viridans</i> (Fæcalis)	
32	Sapremia	Saprophytes	<i>Staphylococcus albus</i>	
33	Endometritis	<i>Staphylococcus aureus</i>	Non-hæmolytic <i>Streptococcus viridans</i> (Fæcalis), <i>Staphylococcus aureus</i> , gonococci	Note absence of gonococci from cervix.
34	Endometritis	<i>Streptococcus hæmolyticus</i> (pyogenes)	<i>Streptococcus hæmolyticus</i> (Pyogenes)	Curettage.
35	Sapremia	<i>Staphylococcus albus</i>	Non-hæmolytic <i>Streptococcus viridans</i> (Ignavus)	
36	Sapremia	Saprophytes	Saprophytes	
37	Sapremia	<i>Staphylococcus albus</i>	Non-hæmolytic <i>Streptococcus viridans</i> (Ignavus)	
38	Sapremia	Saprophytes	Saprophytes	
39	Sapremia	Saprophytes	Saprophytes	
40	Pelvic cellulitis	<i>Staphylococcus albus</i>	Nil	Blood culture yielded no growth.
41	Endometritis	Gonococci	Gonococci	
42	Sapremia	Nil	<i>Staphylococcus albus</i>	
43	Sapremia	Saprophytes	Nil	
44	Sapremia	<i>Staphylococcus albus</i>	Non-hæmolytic <i>Streptococcus viridans</i>	
45	Pelvic cellulitis	<i>Streptococcus hæmolyticus</i>	<i>Streptococcus hæmolyticus</i> (Equi)	Curettage outside hospital; very ill.
46	Septicæmia	Non hæmolytic <i>Streptococcus viridans</i> (salivarius)	Non-hæmolytic <i>Streptococcus viridans</i> (salivarius)	Blood culture yielded <i>Streptococcus salivarius</i> ; mercurochrome; recovery.
47	Sapremia	<i>Staphylococcus albus</i>	Saprophytes	
48	Sapremia	Saprophytes	Nil	
49	Sapremia	<i>Bacillus coli communis</i>	Non-hæmolytic <i>Streptococcus viridans</i> (mitis), <i>Bacillus coli communis</i>	Offensive discharge.
50	Sapremia	Saprophytes	Saprophytes	
51	Sapremia	<i>Bacillus coli communis</i>	<i>Streptococcus hæmolyticus</i> (Pyogenes), <i>Bacillus coli communis</i>	
52	Uterine thrombosis, general peritonitis	Saprophytes	Saprophytes	Curettage; blood culture yielded no growth; death.
53	Septicæmia	Saprophytes	Saprophytes	Curettage at 37.6° C. (99.8° F.); blood culture yielded <i>Bacillus welchii</i> , <i>Streptococcus hæmolyticus</i> ; mercurochrome; death.

is noticed. This was most pronounced and dramatic in the patient (Case 13 D.N.) who had septicæmia with panophthalmitis, a complication of the gravest significance. Her chart, already referred to above, graphically demonstrates the rapid fall of temperature after the mercurochrome injection, accompanied by an amazing improvement and the rapid recovery of this patient. In addition nausea, depression and a troublesome and frequent diarrhoea were commonly observed.

Contraindications.

Mercurochrome should be given very cautiously in cases of nephritis and entero-colitis. In two cases after recent injection of mercurochrome there was *post mortem* an intense nephritis and in a third case (D.D.) there was an extensive ulcerative colitis. *Bacillus welchii* was found on blood culture which rendered the outlook hopeless in this case of septicæmia; mercurochrome was given therefore in large and frequent amounts which caused an acute mercurial ulcerative colitis.

In a study of nineteen cases of septicæmia in patients admitted in 1926 (*vide* Appendix A) it is seen that eleven recovered or 58% and eight died or 42%. This is a remarkable improvement upon the hospital figures of the previous two years, when only one patient recovered. It has already been noted (Table III) that in these acute blood infections hæmolytic streptococci were almost universal, occurring in the blood of 85% of our patients. Moreover, all of these patients were very ill indeed, many of them desperately so.

Mercurochrome 220 was injected intravenously in every case and in one instance (Case 12 C.) five injections, totalling one hundred and twenty-one cubic centimetres, were given before the blood on culturing became freed from organisms and this patient recovered.

Of the patients with puerperal septicæmia only three were confined at the Women's Hospital and two recovered. In three thousand childbirths *per annum* this result speaks for itself.

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The remaining seven patients were confined outside the hospital and most of them were admitted in a very low condition many days after septicaemia had developed and too late for successful treatment. Four of these "outside" cases were fatal. In the abortion series it is seen that in three cases curettage gravely affected the illness.

In the eight fatal cases of puerperal and abortion septicaemia four patients had general peritonitis which in our experience is an invariably fatal complication.

Conclusions.

1. Early diagnosis of septicaemia (bacillæmia) is necessary for early and possibly successful treatment.

2. A blood culture should be made in every obstetrical case, not complicated by breast nor urinary trouble, when the patient has a temperature of 39.7° C. (103.6° F.) or higher for more than twenty-four hours.

3. Mercurochrome—220 soluble, when administered intravenously, has given definite and valuable help in septicaemia.

ACKNOWLEDGMENTS.

I wish to very sincerely thank the Honorary Staff of the Women's Hospital for granting me full access to their patients, the Edward Wilson Obstetrical Research Committee for making provision for the bacteriological work and Dr. Lucy Bryce and Miss F. E. Williams, of the Walter and Eliza Hall Institute of Medical Research, for carrying out the bacteriological examinations; also Dr. Crawford Mollison, Pathologist to the Women's Hospital, who made the blood culture examinations. Finally I would like to express my grateful thanks to the resident medical officers who worked so hard for our patients with septicaemia and in particular Dr. G. B. Bearham who gave many of the mercurochrome injections.

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MODERN VIEWS IN MEDICAL TREATMENT OF PEPTIC ULCER.¹

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I WOULD very much like in the first place to convey to you my sincere thanks and appreciation for the very great privilege and honour you have conferred on me in inviting me through the New South Wales Branch of the British Medical Association to address you at the Annual Meeting of your Association. My pleasure has been immeasurably enhanced owing to the fact that I have been connected with the North-Eastern Medical Association since its inception.

In discussing the treatment of peptic ulcer, the subject matter of my address, there are two points in my opinion of the utmost importance that must be ever before our mind in our medical therapy in this condition. These are, firstly, that in all probability the great majority of peptic ulcers heal quickly and break down just as quickly and secondly, the close relationship between septic foci in various parts of the body and peptic ulcer.

Modern Views on the History of Peptic Ulcers.

With regard to the first point Crohn, of New York, has given fairly conclusive proof that the vast proportion of peptic ulcers heal quickly. In peptic ulcers I do not include toxic ulcers (due to some poison-irritant acting directly on the mucous membrane of the stomach) which are nearly always acute, generally multiple and scoop out the mucosa only. By the term peptic ulcer I mean the definite clinical entity that we so often meet, very often with such a characteristic symptomatology and clinical picture, but at times with varied manifestations which are oft-times misleading. They are subacute or chronic in type and quite a different thing to the acute (toxic) ulcer. I want to stress the point that a typical ulcer may form in a few weeks, even three weeks, while it may heal just as quickly. The period of course varies. Nobody knows why extension of an ulcer stops. Most run into the muscularis and generally stop there, but the general opinion is they do not spread much more than the original stage which they reach, and which they may reach in a comparatively short time. The stomach has remarkable powers of healing and under suitable conditions a peptic ulcer will heal almost as quickly as an ulcer in any other part of the body that is due to an infection.

This view explains quite well the periodicity that so often is associated with the history of peptic ulcer. The defect may heal quite well and the process may break down and all the stages may be gone through again time after time with varying, generally prolonged intervals in which the patient is more or less free from symptoms and discomfort. The explanation of this, of course, is that the

¹A British Medical Association lecture (abridged) read at a meeting of the North-eastern Medical Association, New South Wales, on April 27, 1927.

ætiological factors, primarily responsible for the production of the ulcer in the first instance, are still present in the body even after the ulcer has healed. They are free to operate when other predisposing conditions are favourable. Another ulcer may form perhaps at a completely different site, for example in the duodenum when the original ulcer was gastric or *vice versa*, though this is not usual. In this connexion it may be worth noting that chronic ulcers are generally single, except occasionally in the duodenum; here they are known as "kissing ulcers." Crohn has shown by a very thorough observation and investigation on a large number of cases by repeated X ray examinations that at least many peptic ulcers undoubtedly develop quickly and heal just as quickly under medical treatment.

Although this is probably the history of the majority of peptic ulcers, I do not mean to infer for one moment that the chronic indolent peptic ulcer does not exist, that is to say the type of ulcer that is present and has little or no tendency to heal and remains so for many months or even years. Certainly it does exist and is met with, but I am quite sure it is a rare occurrence compared with the usual type of peptic ulcer. Moreover when such an ulcer is present, I am convinced that symptoms of some kind are ever present, and that the patient does not have the periods of respite and freedom from discomfort for varying intervals which is the usual history with most peptic ulcers. These true chronic indolent ulcers are very indurated and are very hard to treat medically and though they may occasionally heal with treatment, if it is very prolonged (twelve to eighteen months) and carried out very thoroughly, in many cases it is impossible to treat them satisfactorily by medical therapy and they must be treated surgically. At the same time it cannot be too strongly insisted on that careful medical treatment must be carried on for some months after operation (as after all surgical measures undertaken for the relief or cure of peptic ulcers) and secondly that all demonstrable septic foci must be appropriately dealt with and removed.

The Relation and Position of Septic Foci of Infection in Ulcer Therapy.

From the point of view of successful treatment the question naturally arises especially from a prophylactic point of view, can we discover any causative or possible predisposing factors in the production of the ulcer that will assist us in our efforts at successful treatment? According to Eustermann, of the Mayo Clinic, the hypothesis that infection is the main factor in the production of a peptic ulcer is admittedly the only tenable view at this stage of medical progress. Corroborative clinical data indicating causal relationship between foci of infection and systemic disease are by no means lacking and are frequent. This is as true for diseases of the gastro-intestinal tract as elsewhere and it has been proved over and over again that the radical removal of all possible foci has repeatedly caused the subsidence of various gastro-intestinal disturbances and in cases of peptic ulcer has given evidence of

increased healing of an otherwise refractory ulcer. We have all seen evidence of this after removal of septic tonsils or devitalized teeth with periapical abscesses or after efficient drainage of a suppurating sinus in the nose. The same thing may also happen after removal of a diseased appendix or a pathological gall bladder or more rarely after removal of septic foci in other parts of the body. In many cases, however, and especially when the appendix is diseased, this may be an associated trouble following upon a primary focus somewhere else in the body especially septic tonsils or devitalized teeth with periapical abscesses. Suppurative gingivitis again the result of extensive pyorrhœa provokes an infectious gastritis and if not taken care of, in time may result in permanent damage to the gastric glandular tissues.

In connexion with the part that focal disease plays in the production of various pathological conditions and especially peptic ulcer the researches of Rosenow in combination with the work done by Mann and Williamson, of the Mayo Clinic, are to my mind epoch-making in regard to the ætiology and treatment of peptic ulcer. Rosenow's researches prove that many if not all ulcers of the stomach in man and domestic animals are associated with a specific streptococcal infection which has an elective affinity for the gastric mucous membrane; secondly, that foci of infection, especially septic tonsils and devitalized teeth with periapical abscesses and diseased appendices, often harbour these streptococci and at the very least certainly predispose if they do not actually cause the production of the ulcer. Thirdly, when isolated from the ulcer and from the distant focus, this streptococcus has elective affinity for the stomach producing hæmorrhage and typical ulcers in the stomach experimentally on intravenous injections in dogs and monkeys.

Rosenow states that this streptococcus of ulcer produces a poison within its substance which has a selective action on the mucous membrane of the stomach and injures it, producing hæmorrhage, leucocytic infiltration and ulcer. Hence localization and growth of the living organism in the mucous membrane of the stomach may be favoured by this specific poison.

Finally the presence of the streptococcus in ulcers in dogs, according to the work done by Mann and Williamson, its elective localizing power on intravenous injection, its presence in foci of infection and its ability to produce this poison *in vitro* seem to indicate that it is not a secondary invader, but that it plays a most important part in the production of these ulcers.

Work by Billings has also shown the wide influence of focal infection in relation to peptic ulcer especially certain strains of streptococci or streptococci of a certain virulence. His experiments, like those of Rosenow and Mann, confirmed the fact that there was some affinity or attraction or selectivity between certain forms of streptococci and the lining of the gastric wall.

All this leads up to what in my mind constitutes one of the most important features to be ever borne in mind in the treatment of peptic ulcer both as

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regards prophylaxis and cure, both immediate and especially permanent, namely that it is essential if a permanent cure of a peptic ulcer is to be brought about, that all demonstrable and definite septic foci should be thoroughly removed or appropriately treated. At the same time I wish to very strongly deprecate hurried advice in these matters and the wholesale removal especially of teeth, perhaps also of tonsils as almost a routine measure in ulcer cases. There is nothing worse than this and your treatment should be on the conservative side always and your evidence must be conclusive before you decide removal is necessary.

As already fully stressed, one of our greatest troubles in ulcer therapy is not to get an ulcer healed up but to keep it healed. Recurrence and relapse which are often such a characteristic feature of ulcer, are common, very often with a fairly definite seasonal incidence at a time when any septic focus in the body is liable to become active, and I feel sure that the reason why peptic ulcers often fail to heal permanently under well carried out dietetic, hygienic and medicinal measures, is that we have either neglected or failed to discover and remove some offending focus of infection in the body. Consequently it seems that the first essential in the treatment of peptic ulcer is a most careful and assiduous search for definite, not indefinite, septic foci and nothing but the removal of such which are present and can be clearly demonstrated can rationally be expected to relieve the patient from a risk of recurrence.

The Question of Surgical Treatment.

I think we can safely say that until quite recently the results obtained by treatment, whether medical or surgical in cases of peptic ulcer, have not reflected great credit on our therapeutic methods. Peptic ulcer is still a medical ailment and should be treated in the first instance by the physician until there is some definite indication that the condition has become complicated in some way and has passed into the field of surgery. I feel that surgery has too often encroached on the field of medicine in the treatment of peptic ulcer very often with only too disappointing results and I feel certain that if patients with peptic ulcer, except the small percentage which definitely need surgical intervention, were treated medically by a scientific, careful and thorough *régime*, the results obtained would be infinitely better and far less disappointing not only as regards immediate relief, but also for ultimate cure. In this connexion it cannot be over-estimated how important it is, especially in long-standing cases, that the treatment must be maintained and kept up for a long time, six, twelve or even in obstinate cases eighteen months, though the treatment is naturally much less arduous and constant after the first two months. Moreover, it cannot be too strongly insisted on that even if the patient is operated on, he should be carefully dieted and treated in the same way for the same periods, while any septic foci must be removed, with the same attention to detail that is so essential in convalescence after any medical *régime*.

At the same time we must always be prepared to recognize that surgical aid should be called when complications arise which can be adequately dealt with only by surgical means, although I think such only occur in a small percentage of cases. It is not in my province tonight to discuss the relative merits and demerits of medical and surgical therapy in the treatment of peptic ulcer, nor to indicate what class or classes of patient in my opinion should undergo surgical treatment. My object at present is only to emphasize the fact that I consider peptic ulcer to be a medical ailment in the vast majority of cases and that far better and less disappointing results will always be obtained by some very thorough, efficient and scientific medical management. In this connexion I would like to quote Sippy's figures in the results he has attained in his treatment over an enormous number of cases. He states that 85% of all peptic ulcers will heal readily with his management and remain cured. Of the remaining 15% about 6% to 7%, some of which are complicated even with some degree of pyloric obstruction due in these cases to oedema and inflammatory reaction, will "let up" and heal if the treatment is continued and prolonged in obstinate cases for eighteen months to two years and especially if the free hydrochloric acid is controlled night and day and the diet very carefully regulated.

Sippy maintains that of all cases of peptic ulcer probably only 5% to 6% and certainly a maximum of 10% cannot be cured by medical means and call for surgical interference and that moreover if we rely on medical therapy as our sheet-anchor, scientifically, carefully and thoroughly carried out, our ultimate results will be infinitely more satisfactory.

It is only fair to add that figures from a clinic like the Mayo Clinic which until recent years has been mainly a surgical clinic, tend to prove that surgical interference can be undertaken with very excellent results in a very much higher percentage of cases, but such figures cannot discredit the figures attained by Sippy. Moreover, similar results and figures to those of Sippy himself have been claimed by many independent observers who have rigidly adhered to Sippy's directions and management.

Hydrochloric Acid in Relation to Peptic Ulcer.

Although the connexion between focal infection and peptic ulcer cannot perhaps be over-estimated, there is one other factor to be considered in this relation in modelling our views with regard to ulcer treatment and that is the part played by the free hydrochloric acid in the stomach contents. Clinical experience seems to show strongly that while the free hydrochloric acid present in the stomach is allowed to remain in any quantity, the ulcer will not heal or tend to heal and the presence of this free hydrochloric acid does certainly seem to be a factor in prevention of healing even though it may not be admitted that it may be a definite predisposing factor in the production of the ulcer in the first place. Everything seems to point to the fact that none of these ulcers would be chronic except for the free hydrochloric acid and that it is this action of the corrosive gastric juice that is one

of the main, if not the most important factor, in preventing healing. If it were not for this, these ulcers once produced would heal just as ulcers would in any other part of the body where the circulation is not too deficient or disturbed.

The Influence of Nervous and Mental States upon Gastric Functions.

Still another factor from the point of view of treatment and especially of prophylaxis which cannot be overlooked is the influence of mental and nervous states upon gastric function.

No better illustration is needed of the heavy toll taken on functional efficiency than the behaviour and changes in the cardio-vascular system under long continued intensive mental strain. Whether this comes about through the endocrine system or through otherwise disordered chemistry in the body, is not well understood. All we know is that it is as real and as important as the effect of infections on organic changes, whatever is the exact *modus operandi*. Maybe in the case of peptic ulcer the functional disturbance acting through the nervous system may take the form of a hyperchlorhydria in many cases. Consequently, if we wish to attain the best results from treatment, it is very important and essential to inquire into the patient's habits and routine of life. We find that the patient who has domestic peace and happiness, who takes adequate and suitable recreation and relaxation from work and business, who is able to free himself as much as possible from worry, anxieties and heavy responsibilities, will very materially assist himself in getting the very best results from his treatment.

Other Predisposing Factors of Importance in Treatment.

After we have successfully removed all demonstrable foci of infection, we should then turn our attention to any other predisposing factors, the removal of which may very materially help in our treatment and cure. Among the chief of these to be considered are (i) fatigue, (ii) chills, (iii) exposure, all of which may lower resistance if they do nothing else, (iv) bulky indigestible food, (v) the occurrence of naso-pharyngeal and respiratory infections and (vi) the use of alcohol, condiments and tobacco. You are thoroughly familiar and conversant with the effect all these points have and their importance in prophylaxis and I think it is quite unnecessary to discuss them in detail with the exception perhaps of the last group. Condiments *et cetera* should never be allowed for obvious reasons, but especially for their effect in increasing the hydrochloric acid secretion and one of our prime objects in treatment is to hold this in check. Alcohol, too, should be interdicted for a long time.

With regard to tobacco, there is no doubt that smoking appears to have a deleterious effect and should be discontinued. Moynihan especially is of the opinion that smoking is one of the most harmful habits for ulcer-bearing patients; he thinks that "an attack of duodenal ulcer often follows an orgy of tobacco and that abstinence may even check such an

attack." Hygiene of the mouth and oral sepsis are of prime importance here in common with any other conditions. Corsets and tight skirt-bands in women should be forbidden and the clothing should be entirely supported from the shoulders. Occupations which cause constant pressure upon the epigastrium such as shoe-making *et cetera* are bad and must be given up, if at all possible.

Moreover every effort should be made to overcome the hyperchlorhydria or any tendency to hyperchlorhydria which so commonly accompanies and is so very often such a characteristic feature of peptic ulcer, by suitable dietetic and hygienic rules and by adequate medication and this brings us to the question of the main principles to be carried out and the selection of a suitable *régime* in ulcer therapy. There is no doubt at all that a properly selected diet will do much to prevent the occurrence or recurrence of a peptic ulcer, once all demonstrable septic foci and any possible predisposing causes that may be evident, are removed. This applies with equal force in patients that have been treated surgically just as much as it does in those that have been treated by medical means.

The General Medical Treatment of Gastric and Duodenal Ulcer.

In the medical treatment of peptic, that is of gastric and duodenal ulcer, for gastric and duodenal ulcer are twins as regards aetiology and treatment, the indications are to promote healing of the ulcer by (i) rest, (ii) a suitable diet and (iii) neutralization of gastric acidity. Capable nursing is of course of the highest importance. In many cases collaboration between the surgeon and physician is very necessary. Early diagnosis is a very essential feature, with strict medical treatment at that stage and the earlier the diagnosis and the sooner treatment is begun, the easier will be our task.

As soon as a definite diagnosis is made, certain principles in treatment must be borne in mind from the start and in all cases the routine procedure should be as Izod Bennett states: (i) All evident and demonstrable sources of focal sepsis must be removed as soon as possible, (ii) patients for whom surgical treatment is definitely indicated, should be sent on to the surgeon at once or as soon as possible, (iii) the remaining patients which are by far the great majority should be treated with drastic thoroughness on purely medical lines.

I do not propose to spend any time on a discussion of the treatment of any symptoms or complications of this condition but presuming that any hæmorrhage has been controlled and any emergencies suitably dealt with, general treatment should then be begun.

General Management.

All foci of infection having been removed, medical treatment consists in the application of certain principles which should be constantly before our mind. Of these the most important are (i) to secure complete rest for the stomach compatible with sufficient nutrition for the body and (ii) the admin-

istration of food and drugs to check the secretion of active gastric juice or to neutralize the same.

These main principles are attained by promoting (a) physical or mental rest, (b) removal of all sources of irritation and infection from the broken surface, (c) physiological rest for the stomach, (d) dietetic and medical treatment, (e) surgical treatment when such is indicated.

Complete rest in bed is of course most essential. An ulcer will often heal in three weeks under the best of conditions and consequently not less than three weeks and preferably four weeks' rest is absolutely necessary in order always to get our best results. It is doubtful if ever it is justifiable to adopt an ambulatory treatment of gastric ulcer; certainly this should never be advised and should be adopted only if no other course is open.

Removal of all sources of irritation and infection from the broken surface must be attempted by giving no solid food for some time from the beginning of treatment and by employing fluid or semi-fluid nutrients in strictly measured and limited quantities, avoiding any foods in early stages that are likely to cause any stomach distension. Fluids or semi-fluid foods are spaced so that the stomach always contains a minimal load and selected so that the lowest total caloric value compatible with health is maintained. The foods selected, moreover, should be designed to produce the minimum secretion—mainly fats and carbohydrates—taking care, of course, that enough protein is given to keep the body in nitrogenous equilibrium. The foods, secondly, should be chosen from those which have the power of entering into immediate combination with the hydrochloric acid and so may have the same effect as neutralizing the acid when they come into contact with it. Milk and eggs are especially potent in this respect and milk is also a most admirable food, although it is a stimulant to secretion, inasmuch as it can be made the main source of protein for the body needs in our treatment of these patients. A third and very important article of food that should be given from the commencement of treatment is cream which is another source of protein supply and, being a food rich in fat, will tend to check the secretion of gastric juice. Full cream may be used if desired and if well tolerated, but usually is very liable to upset the patient when given continuously. Full cream contains 35% to 40% fat. In practice it is much more practicable to use 20% cream as it is less liable to cause any gastric derangements when used in any quantity as for instance in the amounts outlined by Sippy in his management. Other foods are added as the case is progressing but due care is always taken to see that the foods selected conform to the above conditions as well as possible. Foods such as meat extracts *et cetera* which produce abundant secretion, should never be allowed.

Physiological rest of stomach is best obtained by keeping the organs as nearly empty as possible. When hæmorrhage is still active or recent, probably nothing at all or else small doses of egg-albumin need

be given for first few days. Most authorities prefer to give practically nothing for one to four days after a bad hæmorrhage, although Lenhartz advises that treatment may be commenced at once. There is no need to delay, however, for more than a few days as even in cases of recent hæmorrhage the complete withdrawal of oral alimentation of all kinds of food for any length of time is a mistake. The reasons advanced are many: (i) The maintenance of as good a general nutrition as possible is most important, (ii) the stomach is part of the body and if food is withdrawn and nutrition fails, the vitality of the tissues is diminished as a whole and reparative processes retarded. Too often the dietary advised is nothing but a slow process of starvation, resulting after the ulcer has been healed in a profound debility, anæmia and neurasthenia, requiring another and prolonged course of treatment.

Physiological rest of the stomach is later secured as completely as possible by giving the stomach a minimum amount of work first by giving food in small quantities suitably spaced and secondly by a selection of articles of food which either produce a minimum of secretion of hydrochloric acid or else have the power of entering into immediate combination with hydrochloric acid and so may be looked upon as neutralizing the acid when they come into contact with it. In this work in promoting physiological rest to the stomach, such foods are assisted by the administration of certain drugs such as atropine, belladonna and alkalis—this I will refer to later on.

As already pointed out the diet must fulfil the following conditions: It must be unstimulating, poor in protein and rich in carbohydrates and fats, of sufficient caloric value and given in small feeds so as not to over-distend the stomach. Three main methods or "types" of diet are mainly used called after their introducers (1) Leube-Ziemssen, (2) Lenhartz and (3) Sippy.

The full details of these diets can be found in all textbooks and I will refer briefly to the Sippy diet, the introduction of which I consider is one of the greatest advances in modern medicine in recent years.

Although one must stress the importance of carrying out as exactly as possible the details as outlined by Sippy in his management, it is not suggested for one moment that the Australian practitioner should follow his treatment always in its minutest details. It was designed for the American patient and items may be changed to adapt it to the palates of other nationalities, if it is necessary to do so. But its main principles must be rigidly adhered to and they are: (i) The choice of suitable foods which do not cause a great secretion of hydrochloric acid and at the same time combine fairly well with it, (ii) the importance of keeping the gastric contents alkaline or at least neutral for the whole twenty-four hours and (iii) the use of the stomach tube for securing information as to neutralization. It is of course advisable, if possible, to determine regularly at various times whether the free hydrochloric acid

is being neutralized and it is not a difficult matter for this to be done in hospital; but if this is not always practicable, it will be found that in cases that are not complicated and in which the ulcer has not existed for a great length of time, strict adherence to Sippy's directions as to diet and alkalis will make us fairly certain that we are keeping the free acid neutralized. We can then make occasional exact determinations.

Moreover, as is the case with diabetic patients, many intelligent patients who are anxious to get well and faithfully do their part, will learn how to manage their diet and treatment and, if necessary, they can be easily trained to remove samples and to discover whether acid is being adequately controlled; after some experience they are easily able to adjust their alkali so that an acid specimen will not be obtained.

Sippy says that in any case of a peptic ulcer which is not complicated and which does not react completely to proper medical treatment, the diagnosis must be revised. He maintains that cases of peptic ulcer must react to his management if the treatment is carried out properly, efficiently and carefully. He does not say that the condition will not relapse, as relapse and recurrence are dependent on so many subsidiary factors which must be attended to and which I have discussed, but he maintains that unless the condition is complicated or the ulcer of a very chronic type, the treatment as outlined by him is undoubtedly efficacious in all instances.

Patients on Sippy management lose weight only for the first week or so. After that they maintain weight for some days and then actually will put on weight especially if their weight is under normal figures. This is due probably to two main factors. In the first place they feel so much better in every way; they have peace of mind, rest and sleep well and after a week or two actually have a good appetite for their food. In the second place the caloric value of their food is actually more than most patients require.

The Treatment of True Chronic Indolent Ulcer.

At the outset it is most important to determine whether or not a chronic peptic ulcer is amenable to medical treatment and whether it may be properly and conscientiously treated by medical means. Many may differ from Sippy in his care of the obstructive type of ulcer, but his experience has been duplicated by many physicians in various parts of the world. It is, however, rarely, if ever possible, to undo cicatricial pyloric stenosis by medical management and most probably in the obstructive type of ulcer which reacts and heals with Sippy management, the pyloric stenosis is usually not very severe and is due mainly to oedema and inflammatory change associated with the ulcer itself.

These patients with cicatricial stenosis of the pylorus need either a modified pyloroplasty or a gastro-jejunosotomy or possibly even a subtotal gastrectomy. In any case some operative procedure is necessary to prevent further serious complica-

tions and trouble and to give relief or to assist the cure.

If a chronic ulcer is situated far enough away from the pylorus not to be able to produce any stenosis, it should be determined if possible how deep, large and indurated it is and especially whether it is of the perforating type and if it has perforated slowly in this case and fastened the stomach to an adjacent organ or tissue. Uncontrollable pain usually indicates the existence of a penetrating ulcer if syphilis be excluded. If preliminary medical treatment which should always be tried even in these cases if there is no urgency, fails to relieve such pain, the patient should certainly be treated surgically and operation will usually disclose an ulcer presenting characteristics precluding the possibility of its cure by medicines, rest and diet. A chronic ulcer, however, the symptoms of which yield to medical treatment with reasonable promptitude, is in all probability not of the incurable type and the dietetic and medicinal management carried on for many months usually suffice.

Though in chronic ulcer which has assumed the pyloric obstructive type it is much safer to call in the aid of surgery, Sippy's experience prompts him to state that many such ulcers will yield to a faithful persistent dietary and alkaline treatment and that even in a moderate number of such cases surgical treatment is finally found to be unnecessary. It is extremely difficult to control all patients over a protracted period of treatment and those who will not or cannot afford or submit to such control, had far better have gastro-enterostomy, pyloroplasty or partial gastrectomy done. It should always be remembered, however, that many patients after surgical procedures experience a return of ulcer symptoms, even including bleeding. Therefore, surgical measures must not be looked upon as a means of infallible cure though it is a boon in certain cases where mechanical defects are present in the stomach or duodenum, due generally to cicatricial contraction secondary to the ulcer and also when chronic obstruction is persistent which will not let up at all with most rigid medical treatment,

Physicians are very often called to treat ulcers at a more or less remote period following gastro-enterostomy or even more radical operations. Some prove to be ulcers at the ostium—gastro-jejunal ulcers—but many are recurrences of old gastric or duodenal ulcers.

In the treatment of peptic ulcer with pyloric obstruction Sippy holds that the management differs only from the non-obstructive type in the following particulars. Greater quantities of alkali are required and the stomach must be aspirated every night half an hour after the last alkaline powder is given. Sippy also advises that if an excessive night secretion is present the stomach is again washed out at midnight. In these also after the aspiration at 9.30 p.m. an alkaline powder in these cases should be given every thirty or forty minutes until midnight at which time the stomach is again aspirated. Enough alkali should be given to control

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the acid until the midnight lavage. Sippy says that the night secretion as a rule disappears rapidly when the free acid is thus accurately controlled and that within a week not more than fifteen to twenty cubic centimetres of secretion are found at the midnight aspiration. This small quantity need not be removed or controlled by alkalis so that midnight aspirations may be then discontinued. If it is possible to control the acid as above outlined at night, it is likely to be also controlled during the day but an afternoon aspiration may be occasionally done before an alkaline powder or food is taken and the acidity tested. If the chronic obstruction is of a very marked degree the powders after the 9.30 p.m. aspiration should be continued every half-hour or so and at 11.30 p.m. another aspiration should be done, for two or three weeks by which time excessive night secretion will probably be controlled. In some very severe cases he gives an alkaline powder every hour during the night for a short time as well as during the day.

In about two weeks from the beginning of treatment a seven hour motor meal may be given to determine the emptying power of the stomach. No alkalis are given during this seven hour period. The intake of food and liquids should be compared with that which is removed by lavage.

The aspirations serve three important purposes:

1. The aspiration one hour after the last powder is taken removes all food and secretion and thus lessens the stimulus to a night secretion with its attending irritation and possible corrosion.

2. It enables us to maintain an efficient neutralization of corrosive action of the gastric juice with a minimum of alkali.

3. The absence of occult blood upon repeated examination of aspirated contents justifies the practical exclusion of malignant degeneration of the ulcer. Moreover the continued absence of occult blood in the stomach contents combined with its presence in the stools for a time after which it gradually disappears, renders duodenal localization of the ulcer very probable.

Although the results obtained by Sippy even with pyloric obstruction present are very illuminating as to what can be done by persistent medical treatment, most authorities think that it is always much wiser and safer to call in the aid of the surgeon as soon as possible when definite pyloric obstruction is present. Moreover it is often most difficult to get the patient to submit to all the inconvenience and discomfort of aspirations and more or less persistent treatment during the night and I certainly think that we should reserve Sippy management for the non-obstructive type of ulcer or for cases in which the obstruction is very slight.

Points of Importance in Sippy Management.

Dr. Sippy maintains that the ill effects sometimes seen with large doses of alkali are not due to an alkalosis except in rare instances as very often even with these symptoms he has found free acid in the stomach when aspiration is performed. He maintains that the symptoms are due to dehydration, the bicarbonate of soda and the alkalis in many cases,

acting as a stimulant and a diuretic to the kidneys, irritate the kidneys and this is seen clinically in the increased secretion accompanying the condition.

Consequently great care must be exercised in using alkalis freely when arteriosclerosis or damage to the kidneys or high blood pressure is present. These patients must be watched carefully and it is wiser then to use only moderate doses of alkali. It is safer, however, and best to give in such cases alkalis in the form of tertiary calcium phosphate and tertiary magnesium phosphate, the doses to be calculated by watching the effect of each, especially the magnesium phosphate, on the bowels. The tertiary powders are not eliminated by the kidneys and therefore do not irritate them. In these cases, however, it is probably wiser to resort to surgery at once.

Many men do not agree with the big doses of alkalis recommended by Sippy and think that he rather overdoes the alkali administration; they prefer to give smaller doses and moreover think it is necessary to give one powder only. One in common use is a combination of bismuth oxy carbonate, calcined magnesia and bicarbonate of soda.

The objections maintained against Sippy's doses and powders are that on the one hand there may result a diarrhoea from too large doses of magnesia which is always a troublesome complication in ulcer cases, and on the other hand a possible alkalosis which may be very serious. Sippy however will not admit this and maintains that alkalosis is very rarely seen and is a rare complication except perhaps in arteriosclerotic subjects or people whose kidneys are diseased and inefficient. Those who put forward these objections, think it is much wiser to use smaller doses of alkali which they think is quite sufficient in the majority of cases, and they prefer to put up with the presence of a small amount of free hydrochloric acid in certain cases rather than subject the patient to the risks that may arise from a possible alkalosis. My own experience is that if the patient's kidneys are healthy and the patient has not arteriosclerosis, no ill effects will ever be seen by using the alkalis in the doses usually recommended by Sippy.

Reasons for Occasional Failure of Sippy Treatment.

The Sippy treatment may fail occasionally for the following reasons:

1. Sufficient alkali may not be given to neutralize the free hydrochloric acid.

The only way to discover this is by use of a duodenal tube.

2. Night retention or hypersecretion may occur.

If one hundred cubic centimetres or more are aspirated at night, keep on aspirating until at least only twenty-five to fifty cubic centimetres are present.

3. Treatment may not be carried out long enough.

It must be carried out for at least six to twelve months and in severe cases even eighteen months. The diet, however, allowed after the first two months of treatment is so liberal and varied that subsequent therapy involves no great hardships. Often the length of the diet may weary the patient who will

not persist or cannot carry out the details advised for economic reasons. In such cases it is better to advise surgical measures at once.

4. Low grade intelligence of a patient may prevent his cooperation. Here again it is better to advise surgical measures at the outset.

Drug Treatment.

Next in importance to the selection of the food is the question of preventing and neutralizing acid by means of drugs. Medicinal treatment should, like dietetic measures, promote gastric rest, encourage healing and mitigate pain or discomfort. I do not propose to enter into a discussion of the uses of all the drugs that have been used in the treatment of peptic ulcer, but I will confine my remarks to those drugs and medicaments that are acknowledged universally to be of the greatest assistance in ulcer therapy, namely (i) atropine and belladonna and (ii) the various alkalis including bismuth.

Atropine and Belladonna.

The only potent drug for the prevention of secretion is atropine either in pure form or as belladonna. This action of atropine in inhibiting secretion may be demonstrated by gastric analysis. It occurs if the drug is given hypodermically and it occurs equally if weak solutions are used as a local wash to the mucous membrane of the stomach. It would seem that Sippy has rather tended to underrate the value of belladonna and atropine. There seems no doubt that the administration of 0.65 milligramme (one one-hundredth of a grain) of atropine sulphate given hypodermically or 0.6 cubic centimetre (ten minims) of tincture of belladonna given orally in a large tumbler of water drunk slowly, before the first food each morning is a most efficient method of checking secretion for many hours and will materially assist our efforts in neutralizing any free acid by alkalis inasmuch as less of the latter will be required for this purpose. To repeat this at night at about 10 p.m. is excellent and very helpful in controlling the night secretion but the best method of all is to pass the stomach tube one hour after the last evening feed when you suspect much free acid to be present, withdraw all gastric contents and leave in the stomach about half a pint or so of fluid containing 0.6 cubic centimetre of tincture belladonna. This is a very effective way of preventing nocturnal secretion and is especially useful when it is difficult to keep the acid controlled at night.

It is probable that the best results are obtained by moderate doses of alkali combined with moderate doses of atropine or belladonna given once or twice a day according to the indications.

Of course if alkalis are not being used, for example in connexion with Lenz treatment and management, atropine may be used if desired three or four times a day.

Both belladonna and atropine may be given for fairly long periods, though it is always necessary to watch carefully for any signs of intolerance or the occurrence of toxic symptoms. In addition to the value of belladonna through its action in inhibiting

the secretion of hydrochloric acid, it also acts as an antispasmodic and since a certain amount of pylorospasm is nearly always present with hypersecretion, this property of belladonna may be very useful.

Alkalis.

The principle of neutralization of gastric juice in gastric erosions is not yet sufficiently well recognized, but its value is beyond dispute. The only effective treatment of ulcer in the stomach or duodenum is to bathe it in a non-irritating alkaline or neutral fluid, free from gastric juice. The drugs which best neutralize the hydrochloric acid are the alkalis of which the use of bicarbonate of soda is time-honoured and perhaps most general. It is probably not the best alkali for the purpose as Professor Maclean and Crohn, of New York, have shown that in addition to its neutralizing action, it stimulates a further acid production.

To be of value, excess must be given and this excess is the cause of the trouble. The difficulty can be overcome by taking some insoluble base along with the bicarbonate of soda, so that if any acid is secreted after all the bicarbonate of soda is used up, the insoluble base will be present to neutralize it.

A further objection against the use of bicarbonate of soda in large doses is that it tends to irritate the kidneys, but it will probably only do this if the kidneys are diseased, or in people with any tendency to arteriosclerosis or who are beyond the prime of life when kidney efficiency is likely to be impaired.

Finally another objection lodged against the use of bicarbonate of soda is that when introduced into a stomach containing much free hydrochloric acid it evolves a large volume of carbon dioxide which may evoke pain or even hæmorrhage by overdistending the stomach. This again is purely theoretical.

Perhaps the most generally useful neutralizing drugs in addition to bicarbonate of soda are the magnesium compounds, calcium carbonate and bismuth preparations.

Of the magnesium preparations the most widely used are (1) magnesium oxide which is a white powder occurring in two forms, *magnesia levis* and *magnesia ponderosa*. It has about four times the neutralizing power of bicarbonate of soda. The usual dose is given as 0.3 to 1.2 grammes (five to twenty grains) but usually much larger amounts are necessary and even doses up to eight to sixteen grammes (two to four drachms) may be given for long periods with impunity. In a way it really does not matter what form of alkali is used, this is a matter more of choice and convenience, but the important point is to give a sufficient amount and fairly large doses are necessary, the ordinary pharmacopœial doses being useless.

Magnesium carbonate has about three times the alkalizing power of bicarbonate of soda. The usual dose is given as 0.6 to 1.2 gramme (ten to twenty grains), but here again much larger doses may be given and are often necessary as in the case with magnesium oxide. Should any of the magnesia preparations, as often happens, prove too laxative, it is important to avoid the occurrence of a diar-

rhea and in such cases it is best to use a combination of magnesia with a bismuth preparation and soda.

Calcium carbonate is another very good alkali and it is used by Sippy in his routine management. It has about two and a half times the alkalizing power of bicarbonate of soda. If diarrhoea is a complication it is very useful either alone or to add to other alkalis.

Bismuth preparations are also widely used. They are said to form a dressing for the ulcer surface, but whether this is either practicable or desirable is open perhaps to question. No drug has a more time-honoured reputation and great stress has been laid upon certain supposed healing properties it possesses. It is certain that if it is to do any good the custom of prescribing it in small doses is ludicrous if it is believed that by so doing a bismuth paste is going to be laid over any internal ulcer. On the other hand it is certain that doses of four grammes (one drachm) or more up to even sixteen grammes of the pure subnitrate or subcarbonate may be given with perfect safety but it seems more likely that the therapeutic effect of these substances is more due to their antiacidic power than any direct effect on the ulcer.

Mention perhaps should be made of one additional drug, namely iron, which is often very useful. Peptic ulcer patients are often very anæmic and debilitated and in these cases the administration of iron is very helpful especially after a severe hæmorrhage.

Einhorn's Duodenal Feeding.

Before concluding I would like to mention a form of management that has been used with much success in ulcer feeding, namely, Einhorn's Duodenal Feeding. It is a very good method and is at times extensively used.

A small tube such as is used in fractional gastric analyses is swallowed in the ordinary way as for a duodenal drainage and the patient is regularly fed through this.

A few patients are too nervous and hyper-sensitive to be able to retain the tube; in others it is difficult or impossible to make it traverse the pylorus, but when these difficulties are not present, the method is an admirable one. According to Einhorn, it is not too much to say that the operation of jejunostomy is entirely unjustified until this method of duodenal feeding has been tried and has failed.

Conclusion.

Perhaps the routine for ulcer management is first to use Sippy management or some method embodying its main principles and if the ulcer recurs quickly, resort then to duodenal feeding.

Whatever form of treatment be adopted, it is important always to have clearly before our mind certain main conceptions and axioms:

1. The majority of peptic ulcers under appropriate management will heal quickly and they will break down just as quickly if the main principles involved in treatment are not observed.

2. It should be one of our first aims either immediately or as soon as the patient is in a fit state to

search carefully for any possible focus of infection, which should be eradicated when found.

3. The patient must be put on Sippy management or some similar form of management and diet which adheres strictly to its main conceptions.

4. Intensive alkaline treatment must be efficiently used, perhaps combined with the use of belladonna or atropine so that we are ever remembering the one fundamental and important point of constantly keeping the gastric contents alkaline or at least neutral and so preventing the eroding action of the hydrochloric acid on the raw surface of the ulcer, which is the only effective treatment in healing it.

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THE MENTAL SYMPTOMS AND POST MORTEM APPEARANCES IN HUNTINGTON'S CHOREA.

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JUDGING by the textbooks and recent current literature (*vide The British Medical Journal*, May 8 and 15 and July 10, 1926), Huntington's chorea may be classified as rare and the morbid anatomy remarkably undecided. The prevailing conception of the nature of the disease is that it is a chronic meningo-encephalitis with atrophy of the convolutions.

In the issues of the journal above mentioned there are reports of four cases of Huntington's chorea and Dr. Frederick Back, the Pathologist of the South Yorkshire Mental Hospital, who reported two of these cases, remarked upon the difference of the macroscopical changes found *post mortem* in the cases he examined. In the Victorian Metropolitan Mental Hospitals there are at present three patients suffering from Huntington's chorea and in the pathological records there are *précis* of the clinical notes and *post mortem* records of five others who were inmates of the hospitals and who died between the years 1913 and 1926. As the benefit to the living is the only justification for the dis-

section of the dead, these cases are now published for the information of those interested in this particular disease. In studying the *post mortem* appearances of such a rare condition as Huntington's chorea, the difficulty is to separate pathological changes which might be due to some other condition coexistent with the chorea. Some pathological changes in the brain are common to different diseases. For this reason the study of the morbid anatomy of even five cases may not be sufficient to determine the pathology of this disease. Still it is more likely to do so than will the collecting of the records of isolated cases made by a multiplicity of workers. The *post mortem* examinations recorded here have all been made by the same individual. The living patients will be described first.

Histories of Living Patients.

CASE 1.—J.B., a male, at present at Bundoora, was received at Bundoora in August, 1921, as suffering from war strain. He was stated to be single and thirty years of age. He could give only a poor account of himself, being mentally enfeebled, confused, slow in cerebration and poor in ideas. His health was fair and he was vaguely delusional regarding persecution. Later on he was recorded as simple and childish in speech and manner, also fearful and nervous. No definite delusions nor hallucinations could be elicited and he could read and write but poorly. He has neither relatives nor friends in this country so his previous history is not known. In September, 1924, his condition was diagnosed as Huntington's chorea. He had bilateral twitchings of the shoulders and arms, accompanied by grimacing of mouth and eyes. His pupillary reflexes were normal. His knee jerks were exaggerated and his plantar reflexes were unobtainable. In August, 1926, his condition was that of helpless dementia and constant choreic movements. He stood with a wide base, as do the other patients suffering from this disease, not because of incoordination, but on account of the jerks which would unbalance him if he stood normally. It is not a true Romberg sign, although recorded as such in some of the cases. The gait was a waddle with the feet wide apart and quite different from the ataxic gait although sometimes mistaken for the latter.

CASE 2.—C.L., a female, is at present at Kew. She was received at Kew in June, 1925. Her age on reception was thirty-seven and she was married with three children, the youngest child being nine years of age. She had suffered from chorea for five years prior to reception. Her brother and her sister (*vide* L.B., Case 5, of these *post mortem* notes) have Huntington's chorea. She is thin but appears healthy. She talks to invisible persons and has auditory hallucinations. She has suicidal impulses and feelings of compulsion to injure others. She threatens to murder her husband, because she says he is trying to poison her. Prior to reception she was promiscuously sexual, almost nymphomaniacal. In July, 1925, she was employed in the laundry. In September, 1925, she became noisy and restless, very erotic and delusional regarding wireless. In July, 1926, her health commenced to deteriorate and her habits became defective. Her restlessness continued and she stood and walked with a wide base. Her speech was jerky in character. Her patellar reflexes were exaggerated. Her triceps jerk was exaggerated and no plantar reflex could be obtained. She had no Romberg sign. She could stand with her feet together and her eyes shut because when she tried to make the effort she could control the jerks and did not topple over. This same effort control seems to be the rule in those patients who have not become very demented.

CASE 3.—W.T.D., a male, is at present at Kew. He was received at Kew in June, 1927. His age on reception was forty-four years and he was married, having two children, the youngest being seventeen years old. His habits were said to be temperate. He was in another mental hospital two and a half years prior to his reception at Kew. His mother and two brothers had Huntington's chorea, the

brothers dying in Gladesville Hospital for the Insane. So far the children are normal. No response was obtained to the Wassermann test on two occasions. The specific gravity of the urine was 1926 and no abnormalities were found when it was examined. The certificates of reception stated that he had suffered from Huntington's chorea for six or seven years, that his conduct was erratic, his temper uncontrollable, his speech incoherent and continuous and that he was always about the streets day and night. On reception he was reported as being quiet, slightly enfeebled, pleased with himself and surroundings and having a speech like a general paralytic. There were tremors of the face and tongue. The pupils reacted to light, but were sluggish. The pulse was slow, the knee jerks active, the gait ataxic and definite Rombergism was present. There were coarse involuntary movements and the speech was staccato and explosive in character. In July, 1921, there was no nystagmus, no loss of motor power, no anaesthesia nor loss of any superficial abdominal reflexes. Both knee jerks were exaggerated and ankle clonus was present. The patellar reflex was very indefinite. There was no bowel nor bladder trouble. There was a Babinski reflex on the left side. In October, 1921, he is recorded as being childish and suggestible. In April, 1926, he was walking with great difficulty, his speech was unintelligible and he was becoming progressively worse. In August, 1926, there was unintelligible dysarthria with some loss of control over his saliva. The chorea was continuous, but he could control it by effort to a certain extent in order to effect a special act. He was uncertain on his feet and stood with a wide base. His condition was very thin.

Cases Examined Post Mortem.

The following are the findings in cases that were examined *post mortem*.

CASE 1.—F.T., a female, was certified in 1913 and died in 1915 at Kew. Her age on reception was forty-three and she had suffered from Huntington's chorea for four years. She was married, had had two children and no miscarriages. Her son was twenty-four and her daughter twenty-two years of age. The son suffers from chorea. The patient's father and mother were insane, the mother being choreic in addition. Two of the patient's sisters are choreic and a brother has tremors of the hands and is "nervous." The Wassermann test gave a partial reaction. She thought people were trying to get rid of her and were laughing at her. She destroyed clothing and crockery. She was very thin and in a state of chronic restlessness. She talked to herself and her speech was explosive and hesitating. Deglutition was not affected. Her gait was described as ataxic, also staggering. The knee jerks were exaggerated and Rombergism was present. Later on she became delusional and her memory was poor. She was subject to attacks of excitement during which she got out of control.

At the autopsy the body was thin. The aortic arch and the abdominal aorta were free from atheroma. The mitral valve cusps were sclerosed and the coronary vessels normal. The heart muscle was of a brownish colour and the spleen appeared normal. Double pneumonia was present. The liver was slightly toughened and the capsule was normal. The gall bladder contained several small gall stones. There were chronic adhesions between the gall bladder, bowel and liver. The ovaries were atrophied and difficult to find in the chronic tangle of old inflammation of the broad ligament. The uterus was normal. The thyroid gland glistened on section. The left suprarenal gland had a black stain on the cortex. The calvarium was thick, but not eburnated. The *dura mater* was thick, but stripped easily from the calvarium. The pia-arachnoid appeared normal. The ventricles were dilated. The vessels at the base of the brain and the ependyma were normal. The whole brain appeared uniformly wasted and weighed only 1,148 grammes.

CASE 2.—A male patient was certified at Kew in 1919 and died in 1920. He was aged thirty-five when certified and the duration of his mental symptoms prior to certification was four weeks. The urine contained a trace of albumin. He was dull mentally and showed a tendency to impulsive violence. He had been exposing himself and making improper suggestions to the nurses at the Hetherington Benevo-

lent Asylum, whence he came. He wandered about aimlessly and was untidy and dirty in habits. His speech was hesitating and indistinct. There was no history of heredity available. There were coarse choreic, generalized, incoordinated movements. The speech was affected, being scarcely understandable on account of its hesitancy and indistinctness. In October, 1920, he was recorded as becoming very thin. He later on died from a pyrexial attack.

At the autopsy the body was emaciated. The arch and abdominal aorta were free from atheroma. The valves were normal. The coronary vessels showed semilunar thickening on section. The right ventricle wall was thicker than normal. The spleen was large and tough. The lungs manifested emphysema and a terminal hypostatic pneumonia. The liver substance was tough and the capsule exhibited a marble pattern. The lumbar glands were active and the small intestines congested. The kidneys were large and fibrotic. The bladder was free from disease. The thyroid gland was large and glistened on section. The suprarenals appeared normal. The calvarium was eburnated and slightly thickened. The *dura* was thickened, but not adherent to the calvarium. The pia-arachnoid was slightly opaque, but not adherent to the cortex. The brain substance was edematous. The ventricles were dilated and the vessels at the base of the brain normal. The basal ganglia contained small old hemorrhages. The total brain weight was only 1,065 grammes.

CASE 3.—A.R., a male, was certified at Kew in 1921 and died in 1922. He was fifty-seven on reception and had suffered from chorea for seven years, although the mental symptoms necessitating certification had commenced only one month ago. A sister, aged fifty, has Huntington's chorea and a brother developed Huntington's chorea at fifty-five. Both parents were free from chorea. On reception he was very restless, violent at times and dirty in habits. His speech was incoherent and he was mentally enfeebled. His right arm and leg manifested choreiform movement. The Wassermann test yielded no reaction and the urine was normal.

At the autopsy the body was emaciated, with sores on the backs of the hands, nose and back. The arch and the abdominal aorta were atheromatous and calcified. The coronary vessels were calcified. The heart muscle appeared sound and the spleen tough. The trachea was free from disease and the lungs manifested some bronchitis and a mild degree of induration. There was a chronic plastic peritonitis causing puckering of the mesentery and constriction of an area of small intestine. The kidneys were tough and cystic. The bladder was free from disease. The thyroid gland was dull on cross section and the suprarenals were normal. The calvarium was eburnated, but not thickened. The *dura mater* was thickened. The pia-arachnoid was neither thickened nor adherent. The ventricles were dilated and the convolitional pattern poor. The ependyma was normal in appearance and the vessels at the base of the brain were in good condition. There were no gross lesions on section. The convolutions were wasted. The total weight of the brain was 1,160 grammes.

CASE 4.—A.B., a male, was certified at Kew in 1924 and died in 1925. On reception he was fifty-four years of age, mentally enfeebled and in an advanced stage of Huntington's chorea. He made wild rambling statements, was violent at times and he had dirty habits.

At the autopsy the body was wasted. The arch and the abdominal aorta were both atheromatous. The coronary vessels were atheromatous and the left ventricle was hypertrophied. There was a milky patch on the epicardium of the left ventricle. The spleen was normal in size, with spotted thickening of its capsule. The trachea was clean and the right lung was pneumonic. The stomach was empty and the bowels appeared normal. The liver was tough and congested. The kidneys were tougher than normal, the capsules splitting on stripping them from the cortex. The bladder was clean. The thyroid was small and fibrotic. The suprarenals were normal. The calvarium was thick and eburnated. The *dura mater* was thick and not adherent to the calvarium. The pia-arachnoid was not thickened and stripped easily from the cortex. The vessels at the base of the brain manifested

nodular atheroma. The left lenticular nucleus and caudate nucleus showed a confused structure and the boundaries were ill-defined, as if chronically degenerated. The right *globus pallidus* seemed abnormally brown. The ependyma was normal. The pattern was normal. The brain was wasted, weighing only 1,120 grammes.

CASE 5.—L.B., a female, was certified in 1926 and died in 1926. This patient was a sister of the living patient, C.L., already described. She was forty-five years of age on reception. She was married, but had no children. Her brother and sister suffer from Huntington's chorea. She was in the last stages of Huntington's chorea and incapable of uttering any intelligible remark. She did not understand anything said to her, but lay in bed oblivious to her surroundings. At times she uttered loud cries.

At the autopsy the body was very emaciated. The aortic arch was clean, but the abdominal aorta was slightly atheromatous. The heart was very small, being only 140 grammes in weight. Brown atrophy of the muscle was present in the right ventricle wall. The coronary vessels and the valves were normal. The spleen was small and tough. The trachea was normal and hypostatic pneumonia was present. The liver was small but not tough. The stomach was empty. The pancreas and small bowel were normal. The large bowel was packed with scybala. The kidneys were small and tough, the cortex being narrow. The capsules stripped easily from the cortex, leaving a smooth surface. The bladder was clean and the generatives were atrophied. The thyroid gland was small and glistened on section. The suprarenals were normal. The calvarium was thick, but not eburnated. The *dura mater* was slightly thickened. The pia-arachnoid was normal. The ventricles were dilated and the pattern of the convolutions was good. The ependyma was normal and the vessels at the base of the brain were in good condition. The pineal gland seemed relatively enlarged. The brain substance had a slimy feeling on section quite unlike the ordinary wet brain. There was extreme wasting of the convolutions. The basal ganglia were wasted in keeping with the cortical wasting. The *globus pallidus* was difficult to define. The total brain weight was only 860 grammes.

Summary.

From the psychiatric point of view, it is obvious that the insanity of Huntington's chorea must be classified as one of the dangerous type and requiring close observation. The sudden outbursts of violence in most of the cases and the tendency to exaltation of the *nisus generativus* require institutional control. The danger of suicide is ever present in these cases. The clinical picture is the association of the choreic movements with gradual mental decay and physical emaciation ending up in what is known in psychiatric circles as a brain death, in which the autopsy discloses extreme wasting of the brain, general emaciation and some terminal infection or state, such as hypostatic pneumonia.

The peculiarity of the speech, the standing posture and the gait seem to depend upon the jerkiness of the chorea which causes the explosiveness in the former and the precautionary measures against being toppled over in the latter. In the patients where mental and physical enfeeblement is not very advanced, this can be proved to be a spurious Romberg sign by quietly putting them into the position of feet together and eyes shut. The effort to stay like this inhibits the chorea as in *paralysis agitans*, the movements are controlled and the patients can remain without widening the base for some time before the jerks are renewed. The gait of walking with the legs wide apart, as if the under-clothing were wet, is caused by the same precaution

against being overbalanced by the involuntary jerks. By the time the patients come to a mental hospital the opportunities for an extensive investigation of the reflexes have long since departed, as can be seen by the clinical notes already recorded. It is to emphasize this last statement that the dates of reception and the dates of death are given in the notes of the autopsies.

In studying the *post mortem* findings of these cases, the reader is struck by the fact that, contrary to the accepted idea, there is no evidence of meningo-encephalitis present. In the numbers of *The British Medical Journal* already cited it will be noticed that in two out of the four cases recorded there is no record of thickening or adhesion of the pia-arachnoid membrane. In this group of cases in Victoria there is only one in which there is any evidence of the slightest thickening of the pia-arachnoid and that was of a very mild type. The most prominent *post mortem* finding is the extreme wasting of the brain which is common to the whole series. There is no glial reaction or parasymphilitic reaction. The ependyma is clear in all cases, therefore there is no suggestion of the cerebro-spinal fluid containing an irritant, as is supposed to be the case in the frosting of the obex or the lateral recesses of the fourth ventricle in general paralysis of the insane and some cases of epilepsy. In four of these five cases the vessels at the base of the brain were in good condition. The wasting of the brain is so extreme that the basal ganglia very poorly represent the normal picture of the normal basal ganglionic pattern. In a case of Huntington's chorea which we examined in 1911 the microscopical changes in the brain and the spinal cord were those of nerve cell degeneration and minute hæmorrhages from congested vessels throughout all areas. In one of these more recent cases the microscopical changes were those of nerve cell degeneration and engorgement of dilated vessels without hæmorrhages. The examination of the other organs of the body does not shed any light upon the pathology of this interesting disease. The result of the perusal of the *post mortem* findings in these cases shows most emphatically that Huntington's chorea is not a meningo-encephalitis and this is also in accord with the *post mortem* finding of the cases published in *The British Medical Journal*, as already mentioned.

As the patients recorded here had completed the whole course of the disease before they died and as no sign of disease of the meninges was present at the *post mortem* examination, it may be fairly suggested that when changes in the meninges have been reported in this disease, they have been due to some other coexistent pathological factor. Apart from every other consideration it would not be expected that such an inherited disease descending from generation to generation would be an inflammatory degeneration like a meningo-encephalitis.

Post Scriptum.

Since the above was written the patient W.T.D., described as living and at Kew, has died from the effects of a fall.

At the autopsy the deceased had a cut on the occipital protuberance, the scrotum and perineum were bruised

and there was a surgical puncture for suprapubic paracentesis of the bladder. The deceased was fifty-three years of age at the time of his death. The aortic arch and abdominal aorta showed slight atheroma. The coronary vessels appeared free from disease. The heart muscle was brownish in colour and wasted. The valves were free from disease. The spleen was small and tough. The thyroid gland was small and dull on section. The trachea was normal in appearance. The lungs manifested slight emphysema and some hypostasis. The liver was small and slightly toughened. The stomach was thin-walled and empty. The bowels and pancreas were abnormally pale-coloured, the former being empty. The suprarenals appeared to be normal. The cortex of the kidneys was slightly thinned and the capsules stripped without difficulty, leaving a smooth surface. The bladder was clean, empty and contracted. There was cellulitis of the *cavum Retzii*. The testicles were normal. The calvarium and the *dura mater* were normal. The pia-arachnoid was oedematous, but there was no thickening nor adhesion to the cortex. The condition of the vessels was good. The ependyma of the fourth ventricle was normal, but the ependyma of the lateral ventricles over the region of the *globus pallidus* was granular on both sides. The *globus pallidus* on both sides was very wasted. The convolutional pattern was good. The pineal gland was yellowish, tough and appeared slightly enlarged. The wasting of the cortex was confined to the gyri of the vertex which was very marked in contrast with the convolutions of the base and temporo-sphenoidal lobes. The weight of the unopened brain was 1,320 grammes. The *post mortem* changes in this case are not so advanced, possibly on account of the accident terminating life before the patient became bedridden.

Reviews.

PROGRESS IN MEDICINE IN 1926.

MEDICAL PRACTITIONERS need no introduction to *The Medical Annual*. The number issued for 1927 will enhance the reputation which this publication has earned.¹ Here medical practitioners will find a short account of most of the work done in 1926 in the various branches of medicine and a *résumé* of views of various authorities on the causation of divers diseases. An effort is made to discuss treatment and the utilitarian, the man who may be described as the tablet practitioner, will find in the pages of this book much of the information which is so dear to his heart. The articles are profusely illustrated with pictures taken from journals in all countries. This is a first rate book of reference.

Notes on Books.

A BOOK FOR ROMAN CATHOLIC NURSES.

FATHER R. J. MURPHY has written a book for the guidance of nurses of the Roman Catholic faith.² It is obviously addressed to nurses in ordinary public hospitals, not to the nursing sisters in hospitals owned and managed by Roman Catholic orders. The teaching is frankly religious and in consequence it would be most improper if its contents were subjected to criticism in a medical journal. That the advice given to its readers is ideal and is based on the highest conception of behaviour no one will dispute. The author does not trespass on to the ground of technical training nor does he attempt to influence Roman Catholic nurses in their professional relations to their fellow nurses. He admonishes them to obey implicitly those who are placed above them. We can neither commend nor condemn the book. That is the function of teachers of religion.

¹ "The Medical Annual: A Year Book of Treatment and Practitioner's Index," by various contributors; 1927. Bristol: John Wright and Sons, Limited. Demy 8vo., pp. 623, with illustrations. Price: 20s. net.

² "The Catholic Nurse: Her Spirit and Her Duties," by Richard J. Murphy, S.J.; 1927. Australia: Cornstalk Publishing Company; Sydney: Angus and Robertson, Limited. Post 8vo., pp. 179. Price: 4s. 6d. net.

The Medical Journal of Australia

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The Voluntary Patient.

As a general proposition it may be stated that three things are required for the control of any disease. These are the understanding of the pathogenesis, early diagnosis and the institution of rational treatment at an early stage. Progress in medicine runs almost parallel with the discovery of the cause and nature of disease. The recognition of the process and the application of symptomatic or empirical treatment are unlikely to be of value to humanity. It may, however, be expedient to place the early diagnosis before the others, for if clinicians become familiar with the first manifestations of a disease, the study of the aetiology and physiology of the morbid change will be brought within easier reach.

The nature of the majority of mental diseases is still wrapped in mystery. Various hypotheses have been set up in connexion with such processes as primary dementia, manic-depressive insanity, *folie circulaire*, paranoia and melancholia. These hypotheses have been based on conjecture, at times on wild conjecture. The symptoms, the psychic manifestations, have been mistaken for the disease and a pathogenesis has been elaborated on this insecure foundation. The doctrines have proved as phantastic as are the symptoms by which the diseases are recognized. One disease is known to be a late syphilitic involvement of cerebral tissue. This disease, general paralysis of the insane, is not the result of some obscure reaction on the part of the cerebral cortex to a hypothetical toxin elaborated from some distant septic focus, nor is it a mysterious aberration of function arising from an alleged repression of a mental complex. It is something much more tangible and comprehensible. Moreover it is doubtful whether the early stages of the disease are recognizable. The rational treatment of this condition should be initiated before there are any mental symptoms; the syphilis must be treated while it is still amenable to the specific drugs.

Little progress will be made in the endeavour to control mental diseases until facilities have been

sought and utilized to trace the processes back to their ultimate causes. If the usual plan is followed, the disease will remain obscured by the confusing symptoms. Morbid anatomy probably has little or nothing to teach concerning the essential condition that manifests itself as a manic-depressive insanity. The task of tracing the disease to its origin will no doubt be a laborious and difficult one. But it must be approached with patience, diligence and ingenuity. It is essential to have access to the patients long before the condition is capable of giving rise to mental symptoms. To achieve this, the student must follow the track backwards. The patients must be induced to apply for treatment voluntarily as soon as it is evident that there is some change in conduct, mental processes or physiological reaction. It has recently been urged at a meeting of the Council of the British Medical Association by some prominent members that general practitioners are more competent to recognize and handle insanity in its earliest stages than psychiatrists holding positions in mental hospitals. After the matter had been debated and a few members with unbiassed opinions had put forward their views, the Council modified the resolution of the Hospitals Committee by recommending that the treatment of patients suffering from mental diseases in their early stages should be entrusted to medical practitioners who have special knowledge of the subject. It is true that the matter at issue at the meeting of the Council was the treatment of mental diseases, not an organized attempt to master them. But a profound study of these patients will require the coordinated energies of psychiatrists, physicians, pathologists and physiologists. The work must be conducted in properly equipped hospitals. Special wards must be set aside for these voluntary patients who would be free to come and go, like any other hospital patients. Incidentally it can be demonstrated that the individual patients will benefit materially by institutional treatment outside the mental hospitals. Kraepelin was the first to prove the advantage of the psychiatric clinic where patients manifesting the earliest signs of mental disturbance could obtain expert treatment and care without the stigma of certification and without the association with persons suffering from fully

developed insanity in all its grotesque and ghoulish forms.

The experiment has been made in Australasia by the introduction of the system of voluntary patients. Broughton Hall Clinic was opened in 1921 for uncertified patients. It has accommodation for one hundred and fifty patients. The voluntary system was introduced in New Zealand in 1912 and in Victoria in 1914. This means that patients are admitted to the reception houses and mental hospitals without the restricting influences of certification and a magistrate's order. But these measures fall far short of the ideal. Some benefit has accrued by the dispensation of certification; more has followed the institution of a clinic detached from the mental hospital proper. But what is required is the setting aside of wards at every public hospital for patients with the initial signs of mental disturbance. There is an out-patient clinic at the Royal Prince Alfred Hospital under the control of Professor W. S. Dawson. A small clinic with provision for in-patients as well as out-patients has been in existence at Saint Vincent's Hospital, Sydney, for some years. This somewhat promiscuous experience of the past few years has produced sufficient evidence that patients can be induced to enter special wards at public hospitals voluntarily if the advantages are explained to them by their family doctor. Given such facilities teams of competent practitioners could set to work with a good prospect of success on the task of discovering some real facts concerning the causation of insanity.

Current Comment.

THE DIAGNOSIS OF GENERAL PARALYSIS OF THE INSANE.

THE use of arsenical preparations in the treatment of syphilis has been followed by a decrease in the number of patients suffering from general paralysis of the insane. It is obvious that more efficient treatment of syphilis in its early stages will eliminate many of its late manifestations. Some authorities have predicted that in the course of the next few decades general paralysis will become a comparatively rare disease. It is possible that the decrease may be partly due to the fact that the newer laboratory aids to diagnosis have enabled neurologists to distinguish between psychoneurosis

and incipient structural change of a syphilitic nature. These laboratory methods include the application of the Wassermann test to the cerebro-spinal fluid, the use of Lange's gold sol test, the discovery of an increased number of lymphocytes in the cerebro-spinal fluid (pleocytosis) and of its increased globulin content. It should be useful as well as interesting to consider what is the significance of these tests and how far they contribute to an accurate diagnosis of general paralysis. Response on the part of the cerebro-spinal fluid to the Wassermann test may be taken as indicating a syphilitic process of the central nervous system which may or may not be general paralysis. It may be a syphilitic arteriosclerosis or an insular sclerosis; it may be a gumma. Again it has been held that a curve of a distinctive type, a "paretic" curve, is manifested when the gold sol test is applied to the cerebro-spinal fluid of a general paralytic, that a maximum precipitation tends to occur in the first four or five dilutions of cerebro-spinal fluid when the colloidal solution of gold is added. If this type of response to Lange's test were typical of general paralysis and of that condition alone, there would not be much difficulty in diagnosis. Unfortunately it is not so. Wright and Kermac in 1923 carried out some investigations which tended to show that no special curve can be accepted as typical of any particular disease (see *THE MEDICAL JOURNAL OF AUSTRALIA*, October 6, 1923).

A recent communication by N. W. Winkelman and George Wilson, dealing with this subject, is worthy of study.¹ They point out that the so-called paretic curve may occur in a number of other conditions such as multiple sclerosis, neuro-syphilis other than paresis, meningitis and especially tuberculous meningitis, occasionally in cerebral tumours and at times in other conditions such as epidemic encephalitis. They have analysed the records of patients whose conditions were correctly and incorrectly diagnosed as general paralysis, who died and whose brains were obtained and examined. In addition they have reviewed the histories of ten patients in regard to whom the diagnosis of paresis was made or was considered because of the laboratory tests and whose brains were subsequently examined. These cases were divided into four groups. The first group consisted of thirty-nine cases in which the diagnosis of paresis was made on the history, physical and mental examinations and the results of laboratory tests. The diagnoses were proved to be correct by microscopical examination. Of the thirty-nine patients all but three yielded a response to the Wassermann test when this was applied to the blood serum. Of the three who yielded no reaction, one had received a great deal of intravenous therapy. The cerebro-spinal fluid of one patient was not examined by the Wassermann test, that of another was anticomplementary and the fluid of the remainder with the exception of one yielded a "++++" response. This one patient was a woman who had received prolonged intravenous therapy. Her cerebro-spinal fluid

¹ *The American Journal of the Medical Sciences*, May, 1927.

yielded no reaction, but she was admitted in a state of coma, passed into *status epilepticus* and died in a few hours. The gold test curve was paretic in type in every instance but one. This patient had had antisymphilitic treatment; the curve was of the syphilitic type on two occasions and on one occasion no curve at all resulted from the test. The pathological changes found at autopsy, however, were typical of general paralysis. The cells in the cerebro-spinal fluid were estimated in all cases but one and the average count was thirty-one. The globulin content of the cerebro-spinal fluid of eight patients was not estimated, in one there was no increase and in the remainder an increase was present. The second group consisted of six patients who yielded so-called typical laboratory findings. At *post mortem* examination the condition was found to be general paralysis, but an incorrect diagnosis had been made during life. These diagnoses were: right cerebral hæmorrhage and *tabes dorsalis*, amœbic abscess of the liver and *tabes dorsalis*, syphilitic meningitis, *tabes dorsalis*, syphilitic meningo-myelitis and *dementia præcox*. Winkelman and Wilson conclude from this series that mental symptoms when combined with the so-called typical laboratory findings of general paresis make the latter diagnosis most likely. They claim that the burden of truth is on the shoulders of those who hold that the condition is not general paresis. The third group described by these authors consisted of twelve patients whose condition was diagnosed as general paralysis; laboratory findings typical of this condition were obtained in some of them, but microscopical examination *post mortem* proved that the diagnosis was incorrect. Particulars of these patients are set out in a table. These are of extreme interest and it is obvious that in a number of instances the mistake might easily be made. The condition in some of these patients included such lesions as gumma of the left frontal lobe and of the left parietal region with softening, arteriosclerosis and meningeal syphilis, cervical hypertrophic pachymeningitis, arteriosclerosis and so forth. Although it must be recognized that a tabulated statement of a patient's history does not provide adequate means of judging his condition, it is difficult to understand why some of the diagnoses were made. Thus a female patient, whose age is not stated, had been ill for two years, she had suffered from "cold and aches" and for the previous week she had been confused. Her pupils were unequal and fixed, she suffered from generalized spasticity, was catatonic, depressed, had hallucinations and was disorientated. Her blood serum yielded a response to the Wassermann test, but none of the other laboratory findings was typical of general paralysis. The final diagnosis was pelagra. Again a patient who was finally found to be suffering from glioma of the brain, gave a positive response to the Wassermann test when this was applied to the blood serum, but gave no other typical laboratory findings. This patient manifested a period of excitement and confusion after an attack of erysipelas. She suffered from stupor and rigidity of the neck. She gave no Kernig's sign, her

reflexes were diminished, the right pupil was fixed and the left was sluggish. The fourth group comprised ten patients in regard to whom a diagnosis of general paralysis was considered; the laboratory findings were suggestive, but a diagnosis of general paralysis was not made and microscopical examination *post mortem* did not reveal the presence of this condition. The final diagnosis in these instances included such conditions as gummatous meningo-encephalitis, syphilitic endarteritis, meningo-vascular syphilis, gummatous meningitis and so on.

Although there is nothing new or striking about a communication such as Winkelman and Wilson have made, it serves a useful purpose. It suffices to draw attention to the protean nature of the manifestations of general paralysis. The typical textbook description of the grandiose ideas, the abnormal conduct, the pupillary changes and altered reflex phenomena does not always find its complete exemplification in a general paralytic. After all there is no reason why the spirochæte should be expected to attack one set of cells of the central nervous system to the exclusion of others. In the second place this communication demonstrates what has been repeatedly emphasized in these pages, that laboratory tests are only a means to an end, that they must not be interpreted apart from clinical findings. At the same time they are of such value in diseases of the central nervous system that clinical findings apart from the results of laboratory tests will yield no reliable information. In this connexion it is well to recall a useful *résumé* of the tests applied to the cerebro-spinal fluid and of their results that was made by Latham at the recent congress in Dunedin. Latham set out very clearly the results which might be expected from the several tests in various pathological conditions. His statement will be published shortly in the "Transactions of Congress" as a supplement to this journal. It is possible that a patient may suffer from neurosyphilis and also from a psychosis of non-paretic origin. Diagnosis may be impossible, but care and discrimination in an attempt to assess the true value of the clinical manifestations and the laboratory findings will smooth out many difficulties.

THE INTERNATIONAL HEALTH BOARD.

THE International Health Board of the Rockefeller Foundation recently issued an invitation to the Commonwealth Department of Health to send delegates to the United States of America for the purpose of studying the methods of control and administration in health matters in the various parts of America. The invitation was transmitted to the State Governments and on July 2, 1927, Dr. Robert Dick, Director-General of Public Health, New South Wales, Dr. E. Robertson, Chairman of the Commission of Public Health, Victoria, and Dr. R. C. Everitt Atkinson, Principal Medical Officer, Department of Public Health, Western Australia, left Australia as guests of the International Health Board. All the expenses of the three delegates will be defrayed by the Health Board.

Abstracts from Current Medical Literature.

PÆDIATRICS.

Epilepsy and Ketogenic Diet.

F. R. TALBOT, K. M. METCALF AND M. E. MORLARTY (*Boston Medical and Surgical Journal*, January 20, 1927) discuss the treatment of epileptic children by ketogenic diet. The principle involved is that of ketogenesis elaborated by Shaffer, Woodruff and others. Since complete combustion of fat to carbon dioxide and water is due to the presence of a sufficient amount of available carbohydrate, in the absence of the latter intermediate products of fat katabolism are left unaltered and these ketone bodies are excreted in the breath and urine. Shaffer proved that the production or excretion of acetone bodies is dependent on the relative amount of protein, fat and carbohydrate in the mixture undergoing combustion at the time. It has been found that a reduction or cessation of the epileptic attacks cannot be expected until the diet is sufficient to produce a definite ketosis. When a child is placed on such a diet, it is necessary that the total calories, protein, vitamins and salts should be present in sufficient quantity. The total caloric requirement will depend on the height, weight and physical characteristics of the child as well as the mode of life. The more active the child, the more calories it will require. In this group of children normal activity is encouraged, but over-fatigue is guarded against. The total caloric needs should be based upon the normal weight for height. The basal needs are taken from Talbot's table and to these 50% should be added to allow for exercise, growth and loss in excreta. On account of the character of the ketogenic diet it is desirable and sometimes imperative that the amount of protein should be kept low. Urine analysis showed in the cases studied that the nitrogen balance of the body in practically all instances was positive when one gramme of protein was given per kilogram of the expected body weight. When the ketogenic diet is increased to a ratio greater than two parts of ketogenic material to one part of anti-ketogenic material, a ketosis occurs. A definite ketosis is to be expected from any accurately followed diet in which the ratio is three to one. Such a ketosis may be maintained over a long period of time without the appearance of any untoward symptoms. The general health of these children during the ketosis improved and it was noticed that they seemed to be more free from infections than were the other members of the family. Some of the beneficial changes noted in these patients have been increased alertness with diminished nervousness and excitability and an improvement in their complexions. None of the patients studied had any gastro-

intestinal or other symptoms due to the high fat content of the diet. A simple formula is employed in the calculation of the ketogenic diets, by substituting the grammes of food constituents directly in the formula rather than their ketogenic and anti-ketogenic components. The higher ketogenic diets are obtained by increasing the ratio of food fat to the combined protein and carbohydrate. An allowance of one gramme of protein for each kilogram of body weight is made. In the initial diet the ratio of fat to combined grammes of carbohydrate and protein is 1.5 to 1.0. After several days to a week the necessary diets with increasingly ketogenic ratios are instituted. A diet ratio of between three to one and four to one has usually been found to have a beneficial effect. One patient, having about fifty attacks a day in the hospital, had her attacks reduced to about six daily when her diet was three to one. Higher ratios resulted in the cessation of the attacks. Shortly afterwards the patient was given a diet similar to that which she would ordinarily have at home, high in carbohydrates and low in fats. Her attacks immediately recurred at their usual rate. Similar results have been obtained by fasting. Chemical changes of like nature occur both in fasting and in patients treated by a ketogenic diet. There is a lowering of the carbon dioxide combining power, a lowering of the blood sugar and an increase in the blood acetone.

Pyelitis in Infancy.

B. CHOWN (*Archives of Disease in Childhood*, April, 1927) discusses the pathology of pyelitis in infancy. Referring to cases reported in the literature, the author finds complete information in only nine instances of so-called pyelitis in infants of two years of age or less. In eight of these there was a suppurative nephritis with insignificant lesions elsewhere in the urinary tract, while in one there was cystitis alone. The only case on record of pyelitis verified by microscopical examination is that reported by Cabot and Crabtree and this report is incomplete. Two authors without reporting the histories of their patients in detail, give as their conclusion that in acute fatal "pyelitis" the kidney is always involved, while the pelvis may or may not contain lesions. The new pathological evidence presented is taken from the records of the department of paediatrics and pathology at Johns Hopkins Hospital for the years 1911 to 1924. The cases are divided into three groups. Group I, consisting of twenty-one patients, contains those suffering from the acute and subacute forms. The striking features of this group are the uniform finding of multiple focal, interstitial suppurative lesions in the kidneys, the infrequency of any but the slightest pathological changes in the pelves and their rarity in the ureters and bladder and the recovery of bacilli of the colon group whenever cultures were made. Group II contains four

patients in whose bodies no lesion was found as the source of the pyuria. Group III consists of four patients suffering from chronic pyuria. Here the pelves again manifested no source for the pus, while the kidneys were always involved and contained multiple suppurative lesions and inflammatory lesions in various stages of healing. One case report is added to show that the condition may go on to complete histological healing. All the evidence available points to the kidney proper as the usual seat of the lesion in pyuria in infancy. The author concludes that the term pyelitis is a misnomer. The common lesion is a suppurative interstitial nephritis with which is associated occasionally some degree of pyelitis and rarely cystitis. Rarely the lesion found is an acute glomerulitis or a cystitis. Pyelitis as the sole lesion seldom, if ever, occurs. Both kidneys are usually affected. When the lesion is unilateral, it is more often on the right side than on the left.

Non-Traumatic Diaphragmatic Hernia.

J. S. LEOPOLD (*American Journal of Diseases of Children*, April, 1927) reports a case of non-traumatic diaphragmatic hernia in a child of four years of age. The symptoms which had been present for six weeks, were abdominal discomfort after eating, constipation and loss of weight. There was no history of injury. The child was fairly well nourished. The heart was displaced slightly to the right. There was dullness at the left base posteriorly with diminished breath sounds. There was no history of respiratory disease to account for the physical signs. X ray examination revealed a diaphragmatic hernia and the stomach and parts of the small and large intestines were in the left pleural cavity. As the patient's condition seemed excellent and the mother was not willing that an operation should be performed, the child was kept in hospital under observation. At the end of a period of four weeks during which the condition of the child had improved, symptoms and signs of acute obstruction suddenly appeared. The child complained of intense abdominal pain and of nausea. The abdomen was greatly distended and visible peristalsis was present. Signs of shock rapidly developed. At operation the region of the diaphragm was exposed and it was seen that the mesentery of the small intestine was stretched upwards and disappeared through the diaphragm. A portion of the colon extended upwards in the same manner into the thoracic cavity. Only a small portion of the stomach was found in the abdomen, the remainder being in the thoracic cavity. The colon was easily drawn down. The small intestine was also easily withdrawn until it was almost completely removed from the thorax. The uppermost portion resisted traction. This was due to the fact that the stomach would not readily come out of the thoracic cavity. Fin-

ally an enormously distended stomach filled with fluid was withdrawn. The hernial opening was examined and found to be an enlargement of the oesophageal hiatus in a direction to the left and forwards. It was large enough for three fingers to enter. The opening was closed by four silk sutures. The shock was severe and the child died a few hours after operation.

Banana Pulp for Marasmic Infants.

H. THURSFIELD (*Archives of Disease in Childhood*, February, 1927) gives an account of feeding marasmic infants with banana pulp. The first patient was admitted to hospital at the age of three months weighing 4.5 kilograms (ten pounds). He was on a diet which consisted of cow's milk, whey and Benger's food. This had a caloric value of 580 calories *per diem* and was readily taken and apparently well digested. Of the 580 calories roughly 300 were from carbohydrate, 200 from fat and the remainder from protein. At this point he was given the pulp of one banana *per diem* and a few days later the Benger's food was omitted. His diet then consisted of cow's milk and the pulp of two ripe bananas with a caloric value of about 590. The weight immediately took an upward turn on the addition of the banana. In a short time it was possible to increase the amount of milk, an increase of which had always up to that time been attended by indigestion and loss of weight. Similar results were obtained in five other cases of difficult feeding. The addition of the banana pulp to the diet, replacing some of the carbohydrate previously given in another form, had the effect of increasing the weight and well-being almost at once. When once improvement has begun, the amount of food which can be taken and utilized, is rapidly increased. The author suggests that the benefit obtained is not due to any known peculiarity of the banana as a food, but possibly to some unidentified element in the banana.

ORTHOPÆDIC SURGERY.

Arthrodesis of the Ankle.

G. F. STAUB (*Surgery, Gynecology and Obstetrics*, May, 1927) discusses the available means of dealing with the flail ankle due to paralysis. He selects arthrodesis as the most suitable method. He condemns astragalectomy as a useless and mutilating procedure in these conditions. He divides the methods into three groups: (i) those in which the attack is on joint surfaces only, (ii) those in which the attack on the joint surfaces is reinforced by fascia, tendon or pedunculated periosteal bone flap, (iii) those in which free bone grafts or foreign material, such as nails, pegs *et cetera* are used. The method which he has evolved and for which he claims uniform success, is as follows. A curved incision is made starting over the

fibula between the *peroneus brevis* and *extensor digitorum longus* muscle about eight centimetres above the tip of the *malleolus externus*. From there it proceeds slightly backwards and then curves forward beneath the tip of the malleolus to a point half-way between this and the tuberosity of the fifth metatarsal bone; thence it curves across the dorsum of the foot, ending on the prominence of the instep. All tissues are divided in the line of the incision down to tendon sheaths and the flaps are dissected back. Tendons of the peronei are divided and then the *peroneus tertius* is also cut. The tendons of the *extensor digitorum* and *longus hallucis* muscles with the *ligamentum cruciatum* are dissected free and retracted in a medial direction. The short extensors of the toe are dissected off the *calcaneus* and carried well forward. The foot is fully extended and the following joints are exposed and all articular cartilage is carefully removed: *talo-cruralis*, *talo-calcanea*, *talo-navicularis*, *calcaneo-cuboidea* and *cuneo-navicularis*. The *talus* has now been made too narrow to allow proper apposition with the malleolar surfaces, so it is divided longitudinally with an osteotome and into the division a wedge from the anterior pole of the *caput tali* is inserted to bring about proper contact. The shortening on the medial aspect is balanced by the wide removal of the calcaneo-cuboid surfaces. The soft tissues are brought together, divided tendons are sutured and the wound is closed.

Reconstruction of Ligaments of the Knee Joint.

RECONSTRUCTION of the anterior crucial and internal lateral ligaments of the knee joint by a modification of Hey Groves's operation is the subject of a report by Maurice Horan (*The British Journal of Surgery*, April, 1927). The author deals with the results of the treatment of eleven patients. The operations were all performed by Alwyn Smith and the patients have been under observation for periods varying from six years to six months. Injury was due in each case to direct violence resulting in rupture or stretching of the anterior crucial ligament accompanied usually by rupture of the internal lateral ligament. Reconstruction was carried out through a J-shaped incision, the long limb of the incision being carried down the lateral aspect of the thigh and coming round below the patella. The patella was split medially, the joint being thus exposed. A strip of fascia 3.75 centimetres (one and a half inches) wide was turned down from the thigh and drawn through a tunnel drilled through the internal tuberosity of the tibia and the external condyle of the femur in the line of the anterior crucial ligament. The free end of the fascial strip was then passed through a hole drilled subcutaneously in the adductor tubercle, turned over and stitched to itself. The results were good in all cases. Several patients were able to return to work without any support and in others a

degree of stability was given to a formerly quite unstable joint. One patient, although apparently a good result was obtained, was submitted to resection and arthrodesis on account of his "non possumus" attitude. When the joint after excision was examined, the new ligament was found to be firm and in good condition, the original ligament which had been much stretched had retracted and recovered. The author concludes that the operation results in a joint capable of withstanding the stress and strain to which it is subjected in the course of average life. He also insists that thorough reeducation of the musculature of the limb is important. Prolonged splinting or the use of plaster is to be avoided.

The "De-Gloved" Hand.

G. H. COLT (*The British Journal of Surgery*, April, 1927) discusses the means by which fingers that have been completely skinned, may be saved by primary plastic operation. Technical details of the method adopted in two cases are given as being likely to prove useful in future emergencies. The method adopted was to insert the denuded parts into a pocket under the skin of the hypogastrium in one instance and under the skin of the thigh in the other. The whole of the skinned parts of the first patient were put into one pocket. Six weeks later the surrounding skin was cut into flaps, the hand was removed and the flaps were folded round it like a mit. Subsequent operations were required to amputate portion of the mid-finger, cover in uncovered parts and divide the mit into two parts. Six and a half months after the accident a pin prick was felt on the ulnar side of the dorsal surface and at nine months a light touch was felt. After fifteen months the hand was used for writing and light touch and pin pricks were felt in all its parts. Heat and cold were felt and the patient could pick up a pin and grasp small objects firmly. He is able to support himself and can drive a car, using the injured hand for the controls. For the second patient the thigh instead of the abdomen was used and separate pockets were fashioned for each finger. The author advises this course and also holds that the fingers should be as widely divergent as possible. He also suggests that each pocket should be drained separately and by a dependent drain. The two outer fingers are supplied with lateral flaps for covering the palmar surface, and the central fingers with tubular grafts which when separated are turned over the ends of the fingers. The author draws attention to the more complete return of sensation in these cases as compared with that resulting from secondary grafts following burns *et cetera*. He suggests as a possible explanation that in the latter fibrous tissue may strangle the nerves and prevent them from sprouting. He finally urges that reports of all patients treated in this way should be published to enable an estimate of chances of success to be made.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Medical Society Hall, East Melbourne, on May 4, 1927, Dr. R. J. BULL, the President, in the chair.

Puerperal and Abortion Sepsis.

DR. EDWARD R. WHITE read a paper entitled: "Puerperal and Abortion Sepsis" (see page 38).

DR. R. H. MORRISON expressed his appreciation of Dr. White's paper. In various parts of the world investigations had been carried out on the bacteriology of puerperal sepsis, but very little new information of value had been discovered. It was interesting to notice that the conclusions of Sidebottom had been borne out by the researches of Polack, but were at variance with those of Fullerton and Bonney. He believed that in most cases puerperal infection was exogenous and not endogenous in origin. In cases of endogenous infection he thought that the organisms did not always arise from the genital tract, but that focal infection in teeth, tonsils and other regions were frequently responsible. Organisms that were at first merely scavengers, might later become invaders. He referred to those cases of puerperal infection arising late in the puerperium and instanced one patient who had been well for a fortnight after confinement and then developed signs of septicaemia, a hæmolytic streptococcus being recovered from the blood stream. These cases were probably due to an alteration, either in the virulence of the organism or in the pabulum in which they grew.

He emphasized the great importance of prophylactic measures. The patient should be fully examined during the seventh month of pregnancy and at labour reliance should be placed on abdominal and rectal examination. All hospital statistics showed that the morbidity rate rose with the frequency of vaginal examination and interference during labour. In the Women's Hospital, Melbourne, 9.5% of puerperal patients manifested a rise in temperature. In the past the percentages had been as high as twelve. He thought it should be possible to reduce it to three or four. There should be no interference until the os was fully dilated; otherwise there was bound to be laceration which would not only increase the risk of sepsis, but also give rise to the need for reparative operations later. Patience should be exercised in the conduct of the third stage of labour. If no hæmorrhage occurred, there was no reason why the placenta should not be left for several hours in the uterus, before manual removal was adopted. Statistics compiled at the Queen Charlotte Hospital had shown that the mortality and morbidity rates had been much higher in those patients in whom manual removal had been done, than when the whole or portions of the placenta had been left and spontaneous separation awaited.

When fever occurred after labour, extrapuerperal causes should first be excluded. The perineum should then be examined for an infected tear, which was the only indication for local treatment. In all other cases reliance should be placed on postural treatment and retraction of the uterus which should not be interfered with except in the presence of hæmorrhage. Polack had shown that on the fourth day of the puerperium pathogenic organisms were present in the uterine tract in about 55% of cases. By the ninth or tenth day the uterus was sterile thus showing that it had the power of clearing itself. In both puerperal and post-abortion cases he considered curettage to be harmful as it necessitated trauma, failed to remove all infected material, interfered with the leucocytic barrier, caused hæmorrhage and might result in perforation. A second curettage frequently produced more than the first and he had heard of a case in which this had been so even at a sixth curettage. Retained portions of the placenta causing hæmorrhage should be removed by the finger. He had never regretted making an opening through the posterior vaginal vault and inserting a drain tube in order to intercept the organisms. He had seen many forms of local treatment used, but none were of any definite value.

In any case when intrauterine interference had taken place, prophylactic antistreptococcal serum should be given. In the presence of definite sepsis he would place most reliance on measures directed towards increasing the patient's resistance. This was more important than giving mercurochrome which nevertheless might be of help. He thought that blood transfusion was of value, but there was considerable difference of opinion both with regard to the amount transfused and the method. He thought that small transfusions of about one hundred and sixty or one hundred and eighty cubic centimetres (six or eight ounces) were preferable to the use of larger amounts. In some clinics the use of citrated blood had been discontinued and defibrinated blood used instead. He always gave a small injection of morphine before giving a transfusion. He had been interested to hear that in Dr. White's cases the *Staphylococcus aureus* had been seldom found in the blood. He had seen many severe infections due to this organism and had found that an injection of 0.6 gramme of "Novarsenobenzol" had been very useful, the blood becoming sterile within twenty-four hours.

In giving a prognosis many points had to be considered. He had seen one patient who had died within thirty-two hours of labour. He had also seen one who had been discharged from hospital, had a rigor on the fourteenth day, was readmitted on the eighteenth day and died on the twenty-first day after labour. A streptococcus had been recovered from the blood stream. The general aspect of the patient was very important. The rapidity of the pulse was more important than the temperature. A rising pulse rate with a falling temperature was a very bad sign. The prognosis was not good in patients who slept badly. He did not attach much importance to rigors, but the absence of remissions in the temperature was not a good sign. Generalized abdominal distension was of bad omen, but he had seen a few patients recover after diffuse peritonitis. He referred to Ochsner's dictum that in these cases the abdomen should not be opened and that morphine should be given. In abortion the infection tended to spread along the Fallopian tubes as well as through the lymphatics, but in puerperal infections pelvic cellulitis and peritonitis were more prone to occur. In conclusion he referred to the fact that the importunities of the friends and relatives sometimes led to the adoption of treatment such as curettage and intrauterine douching which did more harm than good.

DR. R. MARSHALL ALLAN congratulated Dr. White on the excellence of his paper and desired to thank the staff of the Women's Hospital for the assistance they had rendered to him in the carrying out of his investigations. He thought that in taking his cultures Dr. White had eliminated contamination from the cervix and vagina. Other workers had not always done this. In Dr. White's series of cases there had been only one patient infected with *Bacillus welchii*, but Professor Cleland, of Adelaide, had recently observed six. The figures shown in Table II of Dr. White's paper corresponded very closely with those of a recent Edinburgh report. To the uninitiated the bacteriology of puerperal sepsis was very confusing. There were organisms in the vagina during the whole of pregnancy and by the fourth day of the puerperium many of them had entered the uterine cavity also. Most of them were non-pathogenic, but some were not, and might in the presence of trauma or hæmorrhage give rise to infection, which however was usually not so severe as that produced by similar organisms introduced from without. Professor Brown, of London, had claimed good results in a small series of cases from prophylactic vaccination, but other observers had failed to confirm this. This was due, he thought, to the large number of organisms concerned and to the small amount of antibody produced by the vaccines. If any infection were found before labour, then a vaccine prepared from the causal organism should be given. He had not seen many good results from the use of anti-serum. He thought that immuno-transfusion was of definite value. In some clinics 0.75 cubic centimetre of a 0.5% solution of phenol was given to the donor three hours before the blood was taken for transfusion.

Young had published a summary of all the known cases in which mercurochrome had been used. The best results

had been obtained in septicæmia originating in ear, nose and throat. The worst results had been in subacute bacterial endocarditis. The puerperal infections were last but not one on the list, there being 62% of recoveries. Those patients who gained benefit from mercurochrome, always had after its administration a rise in temperature followed by a fall. From *post mortem* observations Young maintained that mercurochrome did not cause nephritis which was due to the infection and not to the drug. Enteritis and stomatitis could be alleviated if one gramme of sodium thiosulphate were given intravenously. Any discovered source of infection should be treated during pregnancy. Greater care should be exercised in the conduct of labour, particularly in the management of the third stage and in the use of instruments. Hospitals should be more closely inspected and notification of all rises in temperature made compulsory. Organisms by passage from one patient to another became much more virulent and then an outbreak of sepsis might follow. There should be some system established whereby consultant facilities could be made more available.

DR. A. NORMAN McARTHUR congratulated Dr. White on his paper the preparation of which must have involved a large amount of work. The previous speakers had said very little about autogenous infection. In New Zealand Dr. Doris Gordon had read a paper in which she had described cases in which labour had been normal and there had been no interference or trauma, yet sepsis, undoubtedly autogenous, had occurred. Women were sometimes confined under the most unfavourable circumstances without infection following. He thought that the natural immunity of the patient was a very big factor. The bacterial flora of the vagina was very varied. Some years previously in collaboration with Dr. Harry Williams he had investigated the bacteriology of the vagina in pregnant women and had found that there was always present a streptococcus of some kind which might later on become pathogenic. He thought that the current teaching that endogenous infection was not common, was largely responsible for the generally held view that most infections were exogenous. Although he believed that many infections were endogenous in origin, every care in maintaining asepsis should be taken during the conduct of labour. In the treatment of septicæmia good nursing and postural treatment were most important. In the past intravenous injections of "Eusol" or "Flavine" had been used, but were harmful, as they destroyed the phagocytic powers of the leucocytes. "Novarsenobenzol" was not so inimical to the leucocytes and according to Luker intravenous injections of quinine actually stimulated them.

Immuno-transfusion could be done fairly rapidly and in some cases was beneficial and offered a large field for experimentation. In the presence of hæmorrhage he believed that the retained portions of the placenta should be removed by the blunt flushing curette of Fourness Barrington and not by the finger as advocated by Drs. White and Morrison. In the careful use of this instrument there was no danger of perforating or damaging the uterine wall. In sapræmic cases he had also seen benefit result from curettage carried out in this way. Morphine or heroin was essential in those patients who were restless and not sleeping well. In general peritonitis Groves, of Kyneton, had obtained good results from the use of morphine.

DR. ALLEN ROBERTSON said that even without the use of mercurochrome some patients with puerperal septicæmia due to the hæmolytic streptococcus, recovered with no other treatment beyond good nursing, careful feeding and the administration of quinine by the mouth. In a big semi-industrial practice he had never had a case of sepsis and he attributed this to systematic prophylaxis and care during labour. In abortion cases, if portions of the membranes or placenta were protruding from the os, he advocated the use of a blunt curette to remove *débris* only, but not otherwise. He also ordered a mixture containing quinine, ergot and strychnine.

He had not seen much benefit result from the use of serum, but if given early and in large doses, it might be of value. He had looked for good results from vaccine therapy, but nothing had advanced in this direction. Speaking generally, he thought that a coccal infection might require a vaccine and a bacterial one a serum. He

was very sceptical about the value of mercurochrome and thought that it would destroy the bactericidal properties of the blood before it would kill the organisms.

DR. G. BEARHAM said that he would like to support Dr. White in his remarks in general and in particular about the good results obtained from the use of mercurochrome in septicæmia. As a Resident Medical Officer at the Women's Hospital, he had administered mercurochrome and observed the results in many cases. At first their opinion was very favourable to it, until the technique was improved mainly by injecting immediately after the mercurochrome three hundred to five hundred cubic centimetres of saline solution or glucose and saline solution. Consequently the results obtained during the last year, as demonstrated by Dr. White, showed a remarkable improvement. He therefore felt that mercurochrome was of great help in septicæmia. Some patients after passing the acute stage would drag on in a chronic pyæmic condition with multiple abscesses. Here a blood transfusion would greatly accelerate convalescence.

DR. ARTHUR SHERWIN said that he thought mercurochrome to be of definite value in septicæmic conditions. In these cases it should be given at once and not withheld until organisms were grown on blood culture; this might lead to a delay of several days. Prior to the use of mercurochrome most of the patients with hæmolytic streptococcal septicæmia had died. Since its introduction to the Women's Hospital quite 50% recovered as demonstrated by Dr. White's figures. He thought that antistreptococcal serum was of value, if given early and in large doses.

DR. NORMAN WILSON said that in septicæmic conditions he believed that the uterus should be severely left alone. The rise in temperature was Nature's reaction to infection; he therefore believed that the patient should be well packed with about twenty hot bottles and kept in a continuous sweat. Frequent hot spongings should be given. Fluids should be given freely by mouth even up to nine litres (two gallons) a day. Good nursing was essential. He had not seen much benefit result from the use of mercurochrome. In sapræmic cases he regarded the increased lochia as Nature's attempt to cleanse the uterus; he therefore advised long intrauterine douches, up to eighteen litres (four gallons) of a dilute solution of cyllin, given at low pressure. Fluids were given freely by the mouth and a mixture containing quinine, ergot and strychnine ordered.

DR. W. J. PENFOLD said that serum was frequently given rather blindly and then condemned by those who had not given it a proper trial. In one fatal case of puerperal septicæmia it had been found that of three well known sera then on the market two had failed, but one had succeeded in protecting laboratory animals (mice) against injections of the infecting organism. A laboratory worker had become infected with the same organism and had died. Unless proper measures were taken to insure that a true antiserum to the invading organism was used, any conclusions as to the benefit of serum treatment were valueless. He thought, that if properly used, there was a big field for the use of antistreptococcal serum.

He doubted whether the rigor which sometimes followed the injection of mercurochrome, was due directly to the drug itself. When "Salvarsan" was first introduced, rigors after its injection were fairly common; these had been shown to be due in most cases either to organisms or extract of organisms in the diluting fluid. If distilled water were injected into the ear of a rabbit a fall in temperature would follow, but if at the same time a few organisms were injected into the other ear, the temperature would rise. He thought it probable that the rigor following injection of mercurochrome was due not so much to the drug itself, but to the presence of organisms or extract of organisms, either in the diluting fluid or in the patient's blood stream.

DR. R. J. BULL congratulated Dr. White on the excellence of his paper which well merited the large attendance present. There was still a large amount of work to be done in the elucidation of the problems of puerperal sepsis. Even under the best of circumstances there was still a mortality of about 50% among septicæmic patients. They should not rest satisfied with this or regard mercurochrome as the

last word in treatment. The full pathological history of every patient should be considered carefully by the obstetrician. Many cases of puerperal infection were of endogenous origin and careful antenatal care should save many lives.

DR. EDWARD WHITE in reply said that he wished to thank the speakers for the interesting discussion they had provided. He agreed with Dr. Morrison who had wisely stressed the importance of prophylaxis. So much could be done by prevention and so little by treatment that prophylaxis must always play the most important rôle in sepsis. The same speaker said that raising the patient's resistance was better than giving an antiseptic-like mercurochrome. Dr. White said that this touched upon a most important point in treatment. In treating any infectious disease it was usual to develop gradually the patients own natural powers of resistance until recovery occurred. But in septicæmia the infection was so virulent and the patient so prostrated that immediate help must be given. Mercurochrome was given on admission in the endeavour to convert a generalized blood infection into a local infection, with its better prognosis. Then, as serum therapy had failed, repeated immuno-transfusions were made in order to raise the patient's resistance. He agreed with other speakers who mentioned that mercurochrome was not a panacea, but he felt that this drug gave valuable help, as shown by last year's results when eleven out of nineteen patients with septicæmia (bacillæmia), treated mainly by mercurochrome, had recovered. An initial injection or two of mercurochrome was during 1927 being followed up by repeated immuno-transfusions with satisfactory results, as already two out of three patients with puerperal septicæmia had recovered.

Mention had been made of acute infection occurring late in the puerperium. This was unusual, but there were two patients with septicæmia in hospital admitted from outside, the onset of whose infection was two weeks after child-birth. A year previously he had reported at a hospital clinical evening the appearance of septicæmia nearly five weeks after confinement.

He agreed with Dr. McArthur when the latter emphasized the value of good nursing. Patients were frequently admitted from poor surroundings, looking desperately ill and miserable. It was remarkable the rapid and beneficial change that occurred after a few hours of comfort and good nursing in hospital. Luker, an English worker, stated that he got good results from giving antistreptococcal serum and quinine bichlorohydride.

Dr. Bearham had mentioned their earlier difficulties with mercurochrome which Dr. White had introduced into the Women's Hospital in 1925. But with the improvement in technique which consisted in giving two hundred to five hundred cubic centimetres of saline solution or glucose and saline solution at the same time, much more satisfactory results were obtained.

Dr. White in conclusion said that in writing a paper upon so wide and extensive a subject as puerperal and abortion sepsis, only a few aspects could be dealt with in one evening. The main points that he wished to make were:

1. An endogenous infection by non-hæmolytic streptococci, present in the vagina *ante partum*, could commonly cause sapræmia and mild local sepsis.

2. Severe local sepsis and septicæmia were generally an exogenous infection due to hæmolytic streptococci, though there was some evidence that this could also be an endogenous infection.

3. Sepsis not only depended upon the "seed" or organisms that might be present in or introduced into the genital tract, but also upon the "soil," namely the resistance of the patient.

4. In treatment, prophylaxis or the prevention of infection was the most important factor in dealing with puerperal sepsis.

5. In local treatment the policy of non-interference (apart from hæmorrhage and pus collections) could not be too strongly emphasized.

6. In the general treatment of septicæmia (bacillæmia) apart from good nursing which was most important, mercurochrome had given valuable help. Better still was the treatment first by mercurochrome which was then followed up by immuno-transfusion.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Melbourne Hospital on May 18, 1927. The meeting took the form of a number of clinical demonstrations by the members of the honorary staff.

Artificial Pneumothorax in Pulmonary Tuberculosis.

DR. S. V. SEWELL showed a female patient, aged twenty-two years. She had been quite well until about four months previously, when she began to feel more tired than usual. A month later she had developed a cough which persisted and which had been accompanied by a little whitish sputum. She had remained at work for six weeks after the cough had appeared, but during this time her appetite had been poor, she had been very languid and had begun to lose weight. She had then felt too ill to go to work and stayed at home, although she did not go to bed. For the past two months she had felt cold and shivery in the evenings and had had occasional night sweats. On examination there was flattening with diminished respiratory excursion of the chest over the left apical region. There was dullness over practically the whole of the upper lobe of the left lung, both anteriorly and posteriorly. Krönig's isthmus was three centimetres (one and a quarter inches) wide on the left side and six centimetres (two and a half inches) on the right. Over the remainder of the left side of the chest and over the whole of the right side the percussion notes were normal. Over the upper two-thirds of the upper lobe of the left lung both anteriorly and posteriorly the breath sounds were raised in pitch in both inspiration and expiration and there were numerous metallic crepitations. The lower lobe of the left lung and the whole of the right had manifested no abnormality. No tubercle bacilli had been found in the sputum which was very scanty. X ray examination had revealed widespread active involvement of the left apical lobe and a few linear markings about the mesial portion of the right upper lobe. Dr. Sewell pointed out that, as there was an active progressive lesion of the left lung and the right lung was apparently clear, the indication of artificial pneumothorax was strongly indicated. Treatment by this method had been commenced and radiograms were exhibited showing the successive stages of lung collapse up to the time of presentation, when three injections of air into the pleural cavity had been given.

Dr. Sewell's second patient was a male, aged seventeen years. At the age of two he had had pneumonia and when five years old had contracted poliomyelitis from which he had completely recovered. His father suffered with asthma. His mother had been twice suspected of having pulmonary tuberculosis from which disease his aunt had died six years previously. The patient had been quite well until eight weeks before his admission to hospital, when he was suddenly attacked with generalized aching pains, lasting only a day or two. A few days later he had developed a cough which had persisted and which was accompanied by a good deal of greenish sputum. Although he had not felt well, he had continued at work until three weeks before his admission to hospital. Right throughout his appetite had been poor and he had lost a good deal of weight. Examination of the chest had shown signs of consolidation over most of the upper lobe of the right lung. On the left side below the clavicle there was slight dullness to percussion with bronchial breathing, but no adventitious sounds were heard. The sputum had contained numerous bacilli. X ray examination had shown consolidation of the lower two-thirds of the right apical lobe and widespread earlier involvement of the left apical lobe.

Dr. Sewell considered that artificial pneumothorax should not be induced in this patient as there was considerable involvement of the "better" lung. Although artificial pneumothorax frequently benefited patients of this kind for a few weeks, the disease in his experience usually then progressed in the non-compressed lung.

Spinal Cord Tumour Simulated by Adhesions.

Dr. Sewell also showed radiograms of two patients in both of whom there had been signs of spinal root involvement and of pressure on the spinal cord. In both instances "Lipiodol" which was injected in the theca, had been completely blocked. At operation in both cases adhesions, but no tumour had been found. In one patient after division of the adhesions, there had been an almost complete disappearance of symptoms.

Liver Abscess with Pyæmia and Osteomyelitis of the Skull.

Mr. ALLAN HAILES presented a male patient, aged forty-one years, who had been admitted to hospital on May 25, 1926. Two weeks before he had received a severe blow on the abdomen. A week later he had complained of generalized pains and on the following day began to have shivers and sweats and noticed some shortness of breath.

On examination the temperature was 37.8° C. (100° F.), the pulse rate 100 and the respiration rate 30 in the minute. The liver was enlarged and tender and there was some rigidity of the right rectus muscle. There were 24,000 leucocytes per cubic millimetre of blood. The Casoni and complement fixation tests for hydatid had both failed to yield a reaction. The blood failed to react to the Wassermann test. The Van den Bergh test yielded a delayed direct reaction. X ray examination showed that the right diaphragm was immobile. A diagnosis of liver abscess had been made and on May 26, 1926, under general anaesthesia the liver was needled, but no pus was found. Laparotomy had then been performed, but nothing abnormal was discovered. After operation there had been repeated rigors and signs of fluid, some of which was removed by the exploring needle, had developed at the base of the right lung. The liver was repeatedly explored with a needle without result until July 23, 1926, when thick pus had been found and a large liver abscess had been drained by the transcostal route. The pus from the abscess had contained numerous streptococci. At this time there had been 33,000 leucocytes per cubic millimetre of blood. On July 27, 1926, the patient had complained of pain in the region of the left knee and on examination there was some induration of the muscles of the calf on that side. On August 6, 1926, fluctuation had appeared in the centre of the indurated area and an incision had been made and pus evacuated. Repeated incisions had been made in the leg until November 10, 1926. No growth had resulted from several blood cultures. On November 27, 1926, pain and swelling had appeared in the frontal region and X ray examination had revealed patchy absorption of the frontal and parietal bones. On December 1, 1926, an incision of the scalp had revealed pus and necrosed bone and since then repeated incisions had been made and pus evacuated. A skiagram showed that the necrosis of the skull bones was extending. On January 8, 1927, he had complained of pain over the middle of the left femur and X ray examination revealed chronic osteitis and periostitis. On February 22, 1927, signs of a right *otitis media* had developed and a few days later the drum was incised. On March 2, 1927, he had had a Jacksonian fit and two days later the skull had been trephined in the left parietal region and pus was found extracranially but not extradurally. On April 8, 1927, four separate incisions had been made in the scalp and pus evacuated. On April 21, 1927, a collection of pus in the right thigh had been opened and three days later a left suppurative dacryocystitis had been incised. X ray examination of the skull at this time had shown extensive osteomyelitis of the bones of the vault of the skull, spreading in the diploe and causing extensive necrosis.

Branchial Cyst.

Mr. Hailes's next patient was a male, aged seventy-two years, who five months previously had noticed a small pimple just cranial to the suprasternal notch and on the medial side of the right sterno-mastoid muscle. It had gradually increased in size and at the time of presentation was about the size of a two shilling piece. It was quite painless and did not interfere with swallowing or breathing. The general health had been fairly good, but there had been some asthenia and loss of weight in the past

few months. The swelling was circular in outline, reddish in colour and fluctuant in the centre, but with a firm circumference. It was adherent to the edge of the sterno-mastoid muscle and to the surrounding structures and running towards the mid-line a distinct cord could be felt. The depth of the swelling could not be accurately gauged, but it appeared to run deeply behind the sterno-mastoid muscle in the shape of a cone and was somewhat tender on being grasped deeply. In spite of the age of the patient Mr. Hailes considered that the swelling was a cyst which had resulted from overlapping of the branchial arches and that when it opened it would become a cervical sinus.

Osteoma of the Spine.

Mr. Hailes also showed a female patient, aged eleven years, who had slowly developed a paraplegia, first appearing on the left side and gradually increasing till she had been unable to walk. A skiagram had revealed an osteoma of the spine and "Lipiodol" injected into the theca had been held up at the site of the tumour. The osteoma had been partially removed from the dorsal surface of the body of the vertebra, where it could be seen compressing the cord. Four months later she had been able to return to school and could run about quite well, although she was still a little clumsy.

Intracapsular Fracture of the Neck of the Femur.

Mr. Hailes also exhibited a male patient, aged fifty-one years, who on January 28, 1927, had fallen from a dray on to his left hip. He had at once noticed considerable pain in this region and had difficulty in bearing weight on the left leg. On examination the left lower limb had been everted and could not be raised from the bed. There was shortening to the extent of one and quarter centimetres (half an inch). A skiagram had revealed an intracapsular fracture of the neck of the left femur. The fracture had first been treated by the method advocated by Hamilton Russell. On February 8, 1927, under general anaesthesia the limb had been put in a plaster spica in a position of complete abduction, extension and internal rotation as advised by Whitman. A subsequent X ray examination revealed complete reduction of the fracture which did not result from the first method of treatment employed.

Hydronephrosis.

Mr. Hailes also exhibited a series of pyelograms, illustrating various forms of hydronephrosis.

The first was from a female, aged fifteen years, who for the past three years had had recurring attacks of left lumbar pain, radiating to the groin and lasting as a rule about twelve hours. Latterly the attacks had become much more frequent, occurring as often as three times a week and being accompanied by vomiting. The urine had contained pus and red blood corpuscles. The pyelogram revealed hydronephrosis of the pelvic type, due to a constricting band, which at operation proved to be blood vessels. The capacity of the renal pelvis had been fifty-five cubic centimetres. The blood vessels had been divided with complete relief of all symptoms.

The second pyelogram was from a female, aged twenty years, who had had recurring attacks of left-sided abdominal pain, associated with the appearance in the left epigastrium and hypochondrium of a tumour which would appear with the pain and disappear with its cessation. The urine had contained a trace of albumin, but there had been no pus and no growth on culture. The pyelogram showed that the catheter had become blocked just at the pelvi-ureteric junction and the pelvis of the kidney had not filled. Operation had revealed a pelvic hydronephrosis due to aberrant vessels, four hundred and thirty cubic centimetres (three quarters of a pint) of urine being aspirated from the dilated renal pelvis.

The third pyelogram was from a female, aged thirty-seven years, who for the past five months had noticed hæmaturia at the end of micturition, and a week before admission had passed a good deal of blood in the urine. During the same period she had had several attacks of right-sided renal colic about every month, but there had been no relationship between the pain and the hæmaturia. The urine had contained red blood corpuscles and pus, but

on culture no growth had been obtained. The pyelogram of the left side had been normal, but that of the right had shown hydronephrosis of the infective type. The capacity of the right renal pelvis was forty cubic centimetres. At operation a tuberculous right kidney had been removed.

The fourth pyelogram was from a female, aged thirty-six years, who some years previously had suffered from a *Bacillus coli* infection of the urinary tract. In the past twelve months she had had repeated attacks of right-sided lumbar pain, with shivers and sweats and frequency of micturition. The urine had contained pus and colon bacilli. A cystoscopic examination had revealed nothing abnormal in the bladder, but the urine from both ureters had contained pus. The pyelogram of the left side had shown hydronephrosis of the infective type, in this instance due to the *Bacillus coli* and not tuberculous. The capacity of the left renal pelvis had been forty cubic centimetres.

The last pyelogram was from a female, aged forty years, who had had recurring attacks of right-sided renal pain, associated with hæmaturia and the appearance of a right-sided, tender, renal tumour. This tumour had appeared with the pain and disappeared on its cessation. A skiagram of the renal tract had revealed nothing abnormal. The pyelogram of the right side showed that the opaque fluid had not passed beyond the pelvi-ureteric junction. A diagnosis of obstructive hydronephrosis probably due to aberrant vessels was made. At operation there had been found a renal type of hydronephrosis, due to a calculus which had not been visible in the radiogram.

Foreign Bodies in the Lung.

Dr. C. E. SCANTLEBURY showed a boy, aged eleven years, on whom tonsillectomy had been performed three months before his admission to hospital. At the time of the operation a tooth had been dislodged and had not been recovered and ever since, although feeling in good health, he had complained of cough. Physical examination of the chest had shown in the lower right axilla, an area about the size of the palm of the hand, over which there were dulness, diminished breath sounds and absent vocal resonance and fremitus. A skiagram revealed the tooth impacted in the bronchus supplying the portion of the lung over which the above-mentioned signs had been elicited. Under general anaesthesia a bronchoscope (seven millimetres Jackson) had been passed and the tooth which presented with the crown uppermost, could be seen surrounded by pus and granulation tissue. The tooth had been manipulated until a small carious area presented and enabled it to be grasped with the forceps and removed.

Dr. Scantlebury also showed a male, aged fifty-two years, in whom a rabbit's vertebra had been removed from the lung by the aid of the bronchoscope (nine millimetres Jackson). The details of this case have been previously published in THE MEDICAL JOURNAL OF AUSTRALIA.

Intestinal Obstruction Due to Simple Ulcer of the Transverse Colon.

Mr. VICTOR HURLEY showed a female patient, aged forty-seven years, who had been admitted to hospital on May 29, 1927. A few days previously she had had on attack of colicky abdominal pain which had recurred three days later. At this time there had been some distension of the right lower portion of the abdomen, but there had been no fever and a vaginal examination had revealed nothing abnormal. An enema had been given with good result. A diagnosis of appendicitis had been made before her admission. On the day of admission the distension in the right lower portion of the abdomen had been more pronounced and there had been some vomiting. The temperature had been 37.3° C. (99.2° F.) and the pulse rate 100 in the minute. There was a large ulcer on the left leg. An opaque enema had been given and subsequent X ray examination had shown that it could not be made to pass beyond the middle of the transverse colon. The blood had failed to react to the Wassermann test.

At operation on May 9, 1927, the caecum had been found tense and distended with boggy oedematous walls the peritoneum splitting easily and seven and a half centimetres (three inches) beyond the hepatic flexure there was a

narrow cicatricial ring, adherent to omentum and to the second part of the duodenum. The neighbouring lymphatic glands were not enlarged and there were no secondary deposits in the liver. The terminal portion of the ileum, the caecum, ascending colon, hepatic flexure and fifteen centimetres (six inches) of the transverse colon had been resected and an end to end anastomosis performed. An examination of the resected specimen had revealed at the site of the stricture an ulcer about the size of a sixpenny piece which had almost perforated and was surrounded by much scar tissue. Adjacent to it was the scar of a similar ulcer which had healed. Microscopical examination of a section of the ulcer had revealed chronic inflammatory changes only with nothing definitely suggesting syphilis. Convalescence had been uneventful, the wound healing by first intention.

Ureteral Calculus with Hydronephrosis.

Mr. Hurley's next patient was a female, aged twenty-five years, who for the past fourteen years had had attacks of abdominal pain and vomiting at intervals of about six months. The pain had been severe, but not colicky. There had been no scalding or frequency of micturition and no shivers or sweats. The last attack had been two days prior to her admission to hospital on January 1, 1927. On examination the temperature had been 37.7° C. (99.8° F.) and the pulse rate 94 in the minute. There was in the right loin a large, firm, tender, oval-shaped swelling which a few hours later had become greatly reduced in size and was barely palpable. X ray examination had revealed a stone in the right ureter. Cystoscopic examination after the injection of indigo-carmin had shown that the dye appeared from both ureters within eight minutes. A catheter had been passed into the right ureter, but had become blocked about ten centimetres (four inches) from the ureteric opening into the bladder. Sixty cubic centimetres of a 15% solution of sodium iodide had been injected through the catheter and a pyelogram taken immediately afterwards had shown hydronephrosis and a ureteric stone. On January 7, 1927, the right kidney which was surrounded by adhesions, had been exposed by a muscle splitting incision extending into the right iliac fossa and a right nephro-ureterectomy was performed. The patient had made a good recovery and had left hospital in three weeks with the wound well healed.

Cerebral Tumour.

Mr. Hurley also presented a female patient who in May, 1926, had complained of tinnitus, slight dimness of vision and frontal headache. She had vomited once. On May 28, 1926, there had been double papilloedema with three diopters of swelling in each disc. A careful neurological examination had failed to reveal any localizing signs. A skiagram of the skull had shown nothing abnormal. The blood had failed to react to the Wassermann test. The Casoni and complement fixation tests for hydatid had both failed to yield reactions. On June 4, 1926, a right subtemporal decompression had been done. After operation the papilloedema had gradually subsided and on July 9, 1926, there had been no swelling of either disc. On February 16, 1927, the right disc had manifested four diopters of swelling and the left three, but there were still no localizing signs. On February 24, 1927, a left subtemporal decompression had been performed. The bone had been widely removed and the *dura mater* which was not opened was punctured in many places with a fine exploring needle. Two days after operation a large amount of fluid had been evacuated from beneath the flap. On March 5, 1927, there had been definite improvement in the papilloedema, but on March 15, 1927, it had definitely increased again, there being three diopters of swelling on the right side and four on the left. On March 16, 1927, daily enemata of magnesium sulphate (ninety grammes or three ounces of magnesium sulphate to two hundred and forty cubic centimetres or eight ounces of water) had been ordered. On March 22, 1927, there had been no change in the papilloedema since the previous examination, but after this it had gradually subsided and by May 17, 1927, had practically disappeared. Mr. Hurley said that the point of interest in this case was the departure from the usual procedure of opening the *dura mater* in cases of

"blind" decompression for cerebral tumour. In this case and in another similar one with an equally satisfactory result a wider bone removal than usual had been carried out, together with the puncture of the exposed meninges in many places with a fine exploring needle.

Exophthalmic Goitre and Advanced Heart Failure.

The next patient shown by Mr. Hurley was a female, aged thirty-three years, who had been admitted to hospital on December 4, 1926. Three years previously her weight had been 80 kilograms (twelve and a half stone). One year ago she had noticed a swelling in the neck and soon after this exophthalmos. She had been in bed for the past five months with dyspnoea and orthopnoea and had lost a good deal of weight. On admission the temperature had been 37.2° C. (99° F.), the pulse rate 144 and the respirations 48 in the minute. There had been definite tremor and exophthalmos. The auricle was fibrillating and there was oedema of the limbs and trunk extending up to the angle of the scapula. The abdomen had been tapped and four and a half litres (eight pints) of fluid removed. Tincture of digitalis two cubic centimetres (half a drachm) every two hours for six doses and then every four hours, theocin 0.3 gramme (five grains) three times a day for two days and Lugol's iodine one cubic centimetre (fifteen minims) three times a day had been ordered. On December 5, 1926, the right side of the chest had been aspirated and 426 cubic centimetres (fifteen ounces) of fluid removed. On December 6, 1926, the abdomen had been again tapped and three hundred cubic centimetres (ten pints) of thick yellow fluid containing lymphocytes and Gram-negative bacilli had been drawn off. On December 13, 1926, the pulse rate had been 80 and the respirations 30 in the minute. On January 5, 1927, under gas and oxygen anaesthesia a right hemi-thyroidectomy had been performed and after operation Lugol's iodine one cubic centimetre (fifteen minims) and tincture of digitalis one cubic centimetre had been given three times a day. On January 25, 1927, the basal metabolic rate had been + 44% and four days later the vocal cords had been examined and found to be normal. On February 3, 1927, a left hemi-thyroidectomy had been done and in this, as in the previous operation, a small strip of gland tissue on the dorsal aspect of the lateral lobe had been left intact. Microscopical examination of the gland had revealed large areas of colloid change between which were patches of active cellular proliferation. On March 17, 1927, the basal metabolic rate had been + 4%. At the time of presentation the patient had increased considerably in weight, the pulse was regular and the rate 80 in the minute, the exophthalmos had diminished, there was no tremor and she was gradually resuming her ordinary avocation.

Tetany Following Thyroidectomy.

Mr. Hurley presented a female patient, aged fifty-one years, who had been complaining for the past three months of nervousness, weakness and a swelling in the neck. Her appetite had been very good and about every three weeks she had had attacks of diarrhoea and vomiting. On admission on August 26, 1926, there had been definite tremor, no definite exophthalmos and a diffuse pulsating thyroid swelling. There was also a large rounded tumour in the left lower portion of the abdomen. Lugol's iodine one mil (fifteen minims) had been given three times a day. The Casoni and complement fixation tests for hydatid had both failed to yield reactions. The basal metabolic rate was + 39%. On September 17, 1926, a right hemi-thyroidectomy had been performed. Microscopical examination of the gland had revealed definite hyperplasia of the follicular cells with solid patches of epithelial tissue and not much colloid. On October 15, 1926, hysterectomy had been performed, the swelling in the abdomen being a uterine myoma. On October 26, 1926, the basal metabolic rate was + 3%. On December 18, 1926, the basal metabolic rate had risen to + 47%, and the pulse rate was 108 in the minute. On December 29, 1926, left hemi-thyroidectomy had been done and three days later she had complained of tingling sensations in the face, arms and legs, with some tetanoid spasms and Chvostek's sign had been elicited. Calcium lactate 0.7 gramme (ten grains)

every four hours and parathyroid extract six milligrammes (one-tenth of a grain) twice a day had been given by the mouth and ten cubic centimetres of a 5% solution of calcium chloride intravenously with definite relief. Very little benefit was obtained from colloidal calcium given intramuscularly, but *liquor calcii lactatis* (Martindale) fifteen cubic centimetres (half an ounce) three times a day controlled her symptoms moderately well, but not so well as the calcium given by intravenous injection.

Perforated Gastric Ulcer: Subphrenic Abscess.

Mr. Hurley also exhibited a male patient, aged forty years, who for the past eight years had been complaining of symptoms of gastric ulcer. Fourteen hours before his admission to hospital on November 25, 1926, the ulcer had perforated. At operation there had been on the anterior surface of the pylorus a perforation admitting the tip of the little finger and much pus in the peritoneal cavity. The perforation had been infolded with three layers of sutures and a suprapubic drain inserted. No gastro-enterostomy had been done. On December 24, 1926, a left anterior subphrenic abscess had been opened and thirty cubic centimetres (one ounce) of pus evacuated. On January 26, 1927, a right posterior sub-phrenic abscess which extended into the liver tissue, had been drained. On April 6, 1927, an empyema of the right side had been opened and much pus evacuated. After this convalescence had been uneventful.

Paralysis of the Common Peroneal Nerve.

Mr. Hurley's next patient was a male, aged twenty-six years. Fifteen days previously while playing football, he had been knocked down and on rising had found that the right foot felt numb and could not be dorsiflexed. On examination there was considerable bruising behind the outer side of the right knee and over the upper end of the fibula. There were typical signs of paralysis of the common peroneal nerve. A week after his admission the muscles supplied by this nerve had given the reactions of degeneration, while those supplied by the tibial nerve gave a normal response. X ray examination had revealed new bone formation in the region of the neck of the fibula and although no fracture was disclosed, Mr. Hurley thought that there was either a greenstick fracture or a subperiosteal hematoma undergoing ossification.

Perinephric Abscess.

Mr. Hurley's last patient was a female, aged twenty-eight years, who had been admitted to hospital on January 23, 1927. For the previous ten days she had been complaining of shivers and sweats and of pain in the right lumbar region not radiating to the groin. For the past three days she had been vomiting. On admission the temperature had been 39° C. (102.2° F.) and the pulse rate 106 in the minute. There had been considerable tenderness in the right loin and it was thought that the right kidney had been palpable. Vaginal examination had revealed nothing abnormal. There had been 17,000 leucocytes per cubic millimetre of blood. The urine had contained a few pus cells but no tubercle bacilli. There were 26 milligrammes of urea per 100 cubic centimetres of blood. The urea concentration test had revealed 2.17% of urea in the second hour specimen of urine. On January 28, 1927, cystoscopic examination after the injection of indigo-carmin had shown that the dye appeared from the left ureter in four minutes and from the right in five. The efflux from the right ureter was thought to be a little more purulent than that from the left. Sodium iodide had been injected into the pelves of both kidneys and subsequent X ray examination had shown that the pyelograms of both sides were normal. On February 10, 1927, a right perinephric abscess had been drained and since then the patient had rapidly improved and had made a good recovery.

General Paralysis of the Insane after Malaria Treatment.

DR. H. F. MAUDSLEY showed a male patient, aged thirty-nine years, who had been admitted to the receiving house on April 23, 1924, with the diagnosis of general paralysis

of the insane. At that time he had been very emotional, had had delusions of grandeur and wealth and was at times very truculent and threatening. Examination had revealed a slurring speech, tremor of the facial muscles and tongues, unequal pupils which did not react on exposure to light, slight rombergism and a left knee jerk which was more active than the right. The blood had reacted strongly to the Wassermann test. As he had not improved and was at times very excitable and violent, he was transferred to Sunbury on May 23, 1925. His exalted ideas had still continued, he talked very largely about his immense wealth and he had no insight into his condition. He had then improved considerably, became much calmer and more euphoric and on November 12, 1924, had been sent out on probation. During 1925 he had been readmitted and appeared to be getting rapidly worse. On July 2, 1925, an intramuscular injection of two cubic centimetres of blood from a malarial patient had been given by Dr. R. S. Ellery. On July 11, 1925, rigors had commenced and had recurred every day for twelve days, when they had promptly stopped after the administration of quinine by the mouth. After a short period during which he became even more demented than before, he gradually improved both mentally and physically and in March, 1927, had been discharged from Sunbury. Since that time he had been attending the out-patient department of the Melbourne Hospital. At the time of presentation the pupils reacted sluggishly to light, the Wassermann test yielded no reaction in both the blood and the cerebro-spinal fluid and there was no trace of rombergism.

Subacute Bacterial Endocarditis.

Dr. HUME TURNBULL presented a male patient, aged seventeen years, who had been admitted to hospital six months previously, complaining that he easily became tired. At that time the temperature had been slightly raised, there were numerous petechiæ on the legs and feet, the spleen was palpable, the heart was enlarged and a systolic bruit was audible over the whole præcordium. The *Streptococcus viridans* had been cultured from the blood, although five subsequent blood cultures had revealed no growth. No improvement had resulted from an intravenous injection of mercurochrome and he had been discharged at his own request. Two months later he had suddenly been affected by a right hemiparesis and had been readmitted to hospital. The hemiparesis had improved, although it had not entirely cleared up and he was again discharged at his own request. Two months after this he had been admitted to hospital for the third time complaining that for the past six weeks he had had dull pain in the left hypochondrium with occasional sharp exacerbations. Since then his evening temperature had varied between 37.2° C. (99° F.) and 38.3° C. (101° F.). The spleen was palpable, there were no petechiæ, the fingers were clubbed and the urine contained red blood corpuscles. Ophthalmoscopic examination had revealed double optic neuritis with some edema of the retina. The apex beat of the heart was in the sixth intercostal space, twelve and a half centimetres (five inches) from the middle line and there was one finger's breadth of right heart dulness. A loud rough systolic murmur could be heard over the whole præcordium and a diastolic murmur to the right of the sternum. Four days previously he had complained of sharp pain beneath the sternum, accompanied by a dry cough, both of which had rapidly disappeared. Crepitations could be heard at the bases of both lungs.

Dr. Turnbull's second patient was a male, aged thirty-eight years, by occupation a chief steward. He gave a doubtful history of rheumatic fever at the age of five, but until the onset of his present illness had been otherwise healthy. On January 1, 1927, he had begun to feel "out of sorts," his appetite became poor and he was troubled a good deal with flatulence. Four days later he had begun to have shivers and sweats and had to go to bed. He had then noticed pain of short duration in the left iliac fossa and left axilla and shortly afterwards a cough, accompanied by much sputum which had been occasionally blood stained. Pain beneath the sternum and definite shortness of breath had then appeared and he began to lose weight rapidly. He had then complained of a severe

cramp-like pain in the calf of the right leg coming on fairly suddenly and two hours later noticed that the right leg was swollen, that he could not flex the toes on that side and that he had no feeling in the sole of the right foot. About four days before his admission to hospital on March 24, 1927, he had noticed pulsation in the calf of the right leg. On examination the apex beat of the heart had not been palpable, but on percussion the left border of the heart was ten centimetres from the middle line and there was no right cardiac dulness. At the aortic area systolic and diastolic bruits were audible. The systolic blood pressure was 135 and the diastolic 65 millimetres of mercury. Capillary pulsation could be seen on the forehead. The urine had a specific gravity of 1018, was acid in reaction and contained no albumin, sugar or red blood corpuscles on repeated examinations. The spleen was palpable. The fingers were slightly clubbed. There were no petechiæ. There was oedema over the dorsum of the right foot. In the upper portion of the calf of the right leg was a swelling with marked expansile pulsation. There was complete anaesthesia of the sole of the right foot and he was unable to flex the toes on that side. An examination of the blood had yielded the following results: Red corpuscles per cubic millimetre, 3,500,000; hæmoglobin, 68%; colour index, 1; white corpuscles per cubic millimetre, 6,000; polymorphonuclear cells, 58%; lymphocytes, 30%; large mononuclear cells, 14%.

The blood had been cultured on four separate occasions and no growth had resulted. The colon bacillus had been grown from the urine. The blood had reacted strongly to the Wassermann test. For five weeks after his admission to hospital the evening temperature had varied between 36.7° C. (98° F.) and 37.8° C. (100° F.), but for the following three weeks it had been subnormal. He had been given a course of six injections of "Novarsenobenzol" and potassium iodide by the mouth. Several injections of "Muthanol" had also been given. The circumference of the leg at the site of the pulsating swelling which was regarded as being an aneurysm, had been reduced by half a centimetre.

Dr. Turnbull thought that the patient was suffering from subacute bacterial endocarditis, but he was doubtful whether the aneurysm was due to this disease or to syphilis.

Angina Pectoris.

Dr. DOUGLAS THOMAS showed four patients suffering from *angina pectoris*. The first was a male, aged thirty-six years, who at the age of eighteen had had a chancre. Two years previously he had complained of gripping pain in the left chest and arm coming on after exertion, never lasting more than a quarter of an hour and accompanied by severe mental distress. Latterly the pain had often occurred at night and, although usually in the left chest and arm, had occasionally been present in both arms. The attacks were relieved by the inhalation of amyl nitrite. Examination of the heart had revealed considerable enlargement of the left ventricle and systolic and diastolic bruits in the aortic area. There was capillary pulsation and a "Corrigan" pulse. The systolic blood pressure had been 150 millimetres of mercury. The blood had failed to react to the Wassermann test. X ray examination of the chest had revealed enlargement of the heart to the left, definite pulsation in the aortic area and some projection of the shadow of the descending aorta to the right. The electrocardiogram showed inversion of the T wave in all leads and slight prolongation of the P-R interval. He had been given intravenous injections of "Arsenobenzol" and mercury and iodides by the mouth with no improvement in his condition.

Dr. Thomas's second patient was a male, aged forty-five years. For the past four months he had had attacks of severe but not agonizing pain in the left chest and arm following exertion, accompanied by a sense of constriction and lasting about a quarter of an hour. When the attacks came on, he felt compelled to desist from any effort. On examination there was capillary pulsation with a "Corrigan" pulse. Systolic and diastolic bruits were audible over the aortic region. The systolic blood pressure was 200 and the diastolic 70 millimetres of mercury. The blood had reacted strongly to the Wassermann test. His

symptoms had improved somewhat after treatment with intravenous injections of "Arsenobenzol" and potassium iodide by the mouth.

Dr. Thomas's third patient was a male, aged sixty years. Thirteen months previously he had been under treatment for high blood pressure. One morning he had suddenly been seized with an agonizing pain in the left side of the chest and was afraid to move. Two injections of morphine had failed to relieve the pain, but after a third injection, accompanied by a dose of chloral hydrate by the mouth, he had dosed off to sleep. The whole attack had lasted about four hours. He had been kept under the influence of sedatives for three days and at the end of a week had been allowed to get up. There had been no return of the pain, although on one or two occasions he had had a slight sense of discomfort. Since the attack he had had two severe attacks of pulmonary oedema, but at the time of presentation was able to get about fairly well. The systolic blood pressure was 180 and the diastolic 140 millimetres of mercury. A few crepitations could be heard at the base of the right lung. X ray examination of the heart revealed enlargement to both the right and the left, but no gross aortic dilatation. The electrocardiogram showed inversion of the T wave in Lead one.

Dr. Thomas's last patient was a male, aged fifty-six years. The past history was entirely normal. Two days before admission to hospital while walking down the street, he had noticed a "tight clutching" pain over the heart, accompanied by faintness and had felt himself compelled to stop and sit down. He could feel his heart beating forcibly but not rapidly and after resting for five minutes, was able to resume walking. The day before his admission he had been forced to rest several times when walking and finally got a very severe attack of pain over the sternum and slightly to the left thereof which had lasted a quarter of an hour. On the day of his admission he had had another severe attack which had necessitated his being carried to hospital, where he had been given a hypodermic injection of morphine. He had remained in hospital for several days during which time he had had several slight attacks and was then discharged to the convalescent home. At the time of presentation he was attending the out-patient department and although he was having only occasional slight attacks, was unable to undertake any real effort.

X ray examination of the chest had revealed enlargement of the heart to the left and some slight general aortic dilatation. On auscultation the heart sounds had been normal. The systolic blood pressure was 130 millimetres of mercury. An electrocardiogram had shown inversion of the T wave in Leads one and two. The blood had failed to react to the Wassermann test. Treatment had consisted in the administration of potassium iodide by the mouth.

Auricular Fibrillation.

Dr. S. O. COWEN showed a male patient, aged forty-four years, who on March 10, 1927, had been admitted to the out-patient department, complaining of symptoms of mild cardiac failure. On examination the heart had been enlarged, the cardiac sounds had been "tic tac" in character, but no murmurs were heard. The pulse had been regular and the rate 90 in the minute. An electrocardiogram had shown that the auricles were fibrillating. On March 31, 1927, he had complained that slight exertion caused immediate quickening of the heart rate which stopped suddenly after the effort ceased. Raising himself from the lying to the sitting position four or five times constantly induced an attack of tachycardia with a pulse rate of 200 in the minute and apparently regular in rhythm. The onset and offset of these attacks had been quite sudden, the latter being signalized by three or four "heavy bumps," easily perceptible by the patient. The electrocardiograph tracing had shown that auricular fibrillation was present during these attacks of tachycardia, but the onset and offset had not been traced. On April 7, 1927, tincture of digitalis in doses of 0.5 mil (seven and a half minims) three times a day had been given for the first time and on April 14, 1927, the dose had been increased to one mil. On May 12, 1927, the patient's symptoms on exertion had been just the same as before, but there had been no rise in the

pulse rate, because of the heart block produced by the digitalis.

Dr. Cowen commented on the unusual nature of the attacks which had at first been regarded as due to paroxysmal tachycardia and he discussed the advisability of giving quinidine treatment.

Rheumatic Endocarditis: Adhesive Pericarditis: Auricular Fibrillation.

Dr. Cowen's second patient was a female, aged twenty-six years. In 1915 she had been in bed for six months with a severe attack of rheumatic fever which had affected the heart. After this she had remained in fairly good health until April, 1925, when she suffered from cardiac failure with oedema dyspnoea and severe hæmoptyses. On September 7, 1925, she had attended the out-patient department stating that she had been resting at home since her attack of cardiac failure, that she felt fairly well and was anxious to know whether she could return to work. The apex beat of the heart was in the seventh intercostal space sixteen centimetres (six and a half inches) from the middle line. There was two finger's breadth of right cardiac dullness. The pulse was irregular and the rate 80 in the minute. The electrocardiogram had shown auricular fibrillation. A diastolic shock could be heard all over the præcordium, but most plainly in the region of the apex beat which moved only two centimetres when she turned on to her left side. A blowing systolic murmur could be heard all over the præcordium, but most intensely at the cardiac apex. The second sound could be heard only with occasional beats. A diastolic murmur, best heard in the second and third left intercostal spaces close to the sternum, was also present. Capillary pulsation was visible in the lip, cheek and nails. The systolic blood pressure was 120 and the diastolic 80 millimetres of mercury. It had been found that tincture of digitalis in doses of 0.5 mil (seven and a half minims) three times a day sufficed to keep her pulse rate at about 80 in the minute, but despite fairly strict rest at home her heart symptoms had persisted in a moderate degree and on December 18, 1925, she had been admitted to a convalescent hospital where she had remained for eight weeks. On February 12, 1926, she had been discharged with a pulse rate of 80 in the minute and the heart slightly reduced in size and taking tincture of digitalis 0.7 mil (ten minims) three times a day. On February 22, 1926, the pulse rate had been 60 in the minute and there was a tendency to coupled beats. The digitalis had consequently been reduced to 0.5 mil three times a day. On May 3, 1926, she had resumed work (sewing) and felt well. In June, 1926, she had had an attack of influenza and had passed through it satisfactorily. Since then she had been continuously at work and taking tincture of digitalis in doses of 0.3 mil (five minims) three times a day which sufficed to keep her pulse rate between 70 and 80 in the minute. The cardiac signs had remained unaltered.

Dr. Cowen commented on the satisfactory control of the pulse rate in a patient at work by the continued taking of digitalis. He considered that this was not often easy to accomplish. He also discussed the significance of comparative fixity of the apex beat, aortic bruits best heard to the left of the sternum and a diastolic shock in the diagnosis of adhesive mediastino-pericarditis.

Mitral Stenosis.

Dr. Cowen also exhibited a patient showing the classical signs of mitral stenosis which had been present fourteen years previously when she attended the out-patient department of the Melbourne Hospital.

Granuloma of Lymphatic Glands.

MR. HAROLD DEW showed a male patient, aged thirty-six years, who had been first seen on June 12, 1926. He had been operated on some time previously in the country for enlargement of lymphatic glands in the left side of the neck. The glands in the submaxillary triangle and the left side of the neck had been very much enlarged and there were multiple discharging sinuses. Repeated examinations for the organisms of actinomycosis had been without result. He had been exhibited at a meeting of the Melbourne

Hospital Clinical Society where the diagnosis of actinomycosis had been favoured. Since then there had been a gradual extension of the disease which was most unusual in actinomycosis, to the glands in the axilla and the right side of the neck. These were continually breaking down. A gland had been removed, microscopical examination of which had revealed chronic tuberculosis with secondary infection. Sections of the gland had been stained for tubercle bacilli, but none were found. The patient had been treated with potassium iodide, iodine, heliotherapy, vaccines and for the past seven months with deep X ray therapy, but there had been no improvement.

Carcinoma of the Floor of the Mouth.

Mr. Dew's next patient was a male, aged sixty-two years, who for the previous seven months before his admission to hospital had had an extensive foul squamous carcinoma of the floor of the mouth, spreading to the gums, tongue and fauces with enlargement of lymph glands in the neck, which at another hospital had been regarded as being inoperable. Under intratracheal chloroform anaesthesia the growth had been treated by diathermy and six weeks later the glands had been removed. Subsequent microscopical examination had proved this to be carcinomatous. The growth had disappeared and all that could be seen at the time of the meeting, was some adhesion between the tongue and the floor of the mouth. There had been no recurrence after ten and a half months.

Carcinoma of the Palate, Tonsil and Lateral Wall of the Pharynx.

Mr. Dew also showed a male patient, aged forty-two years, who when first seen, had had an extensive inoperable carcinoma of rapid growth, involving the palate tonsil and lateral pharyngeal wall and causing blockage of the Eustachian tube. In October, 1926, under intratracheal anaesthesia the growth had been treated by diathermy and on November 19, 1926 a wide removal of the cervical lymphatic glands had been done. The tumour had disappeared, but in December, 1926, there was a slight local recurrence at the back of the pharynx which had been treated by deep X ray therapy. This treatment at the same time had been applied to the glands in the neck. At the time of presentation all that could be seen, was a small doubtful area, behind and above the right side of the hard palate.

Carcinoma of the Testis (Semenoma).

Mr. Dew also presented a male, aged twenty-six years, who for about eight months had had an enlargement of the testis, apparently varying in size. There had been no pain. On examination the testis had been enlarged and hard and testicular sensation was present above and in front. The epididymis had been palpable and there was no effusion into the *tunica vaginalis*. On March 18, 1927, orchidectomy with removal of the lumbar glands had been done. After operation deep X ray therapy had been applied to the gland area. Microscopical sections of both the testis and a lumbar gland, showing carcinomatous changes, were exhibited. The patient at the time of presentation felt well, but Mr. Dew regarded the prognosis as being doubtful.

Mr. Dew also exhibited a number of microscopical sections of testicular tumours which had been removed in the past two years.

Hydatid Disease.

Mr. Dew also showed four patients illustrating problems in the treatment of hydatid disease.

The first was a male, aged fifty-two years, who in March, 1926, had been operated on in the country for a hydatid cyst of the left lobe of the liver. The cyst had drained for seven months. An incisional hernia had developed, but the hydatid had healed. In September, 1926, he had had a second operation for an intrathoracic hydatid on the right side and as the wound had discharged daughter cysts and bile, there must have been a liver cyst which had extended into the thorax. The wound had drained intermittently for several months and had then closed. At the time of his admission to hospital he had

felt sick and had intermittent expectoration of profuse foul, brownish pus. The Casoni and complement fixation tests for hydatid had both yielded reactions. X ray examination of the chest had revealed a right sided pneumocyst with gas above and fluid below. "Lipiodol" injected through the trachea had failed to enter the cyst, probably owing to an insufficient amount being used. Mr. Dew considered that drainage of the most dependent part of the cyst should be established and that at the same time the diaphragm should be explored. If this were not successful, a future thoracoplasty might be necessary.

The second patient was a male, aged fifty-five years, who nineteen years previously had been operated on by Mr. F. Bird for a ruptured hydatid cyst, probably arising from the liver. He had been quite well until eight years previously, when he had first noticed a lump appearing from beneath the left costal margin and inconveniencing him only by reason of its size. Three weeks previously he had been very constipated and had been jaundiced for a few days, but had had no pain and had lost no weight.

On examination there had been dullness and diminished breath sounds at the base of the right lung. The liver edge had been palpable two finger's breadth below the costal margin. A large fluctuant tumour with an irregular surface could be felt coming from beneath the left costal margin and extending as far as the umbilicus. There had been 7,500 leucocytes per cubic millimetre of blood. The blood had failed to react to the Wassermann test. The results of the Casoni and complement fixation tests for hydatid had both been positive. X ray examination had shown that the left diaphragm moved fairly well, but was pushed up for about five centimetres (two inches) with a full contour, probably by a left subphrenic hydatid cyst. The excursion of the right diaphragm was restricted and it was held up posteriorly by basal pleural adhesions, probably due to a subphrenic hydatid of the right side. Mr. Dew thought that there were bilateral residual cysts and he proposed to operate at an early date.

The third patient was a male, aged thirty-eight years, who in 1922 had been operated on for hydatid disease arising from the upper three thoracic vertebrae and extending into the post vertebral muscles. Sinuses had resulted. Subsequent laminectomy had been performed twice in the region of the second and seventh thoracic vertebrae for cysts causing pressure on nerve roots and spinal cord with severe pain and paraplegia. For the four years he had felt well and had worked hard, but there had been intermittent discharge of pus and cysts from the sinuses resulting from the previous operations and occasional anaphylactic manifestations. Eighteen months previously a wide resection had been performed for a secondary rodent ulcer in the parotid lymph glands. There had been no recurrence, but there was a residual facial paralysis. At the time of presentation he was complaining of intense root pains in the distribution of the upper dorsal nerves and he was expectorating hydatid cysts and debris from an intrapulmonary cyst. Mr. Dew considered that the ultimate prognosis in this case was hopeless, as was usually the case in typical hydatid disease of the vertebrae.

The fourth patient was a male, aged twenty-four, who had been treated for four years in a sanatorium in the belief that he had tuberculous disease of the lungs. He had lost much weight and had been coughing up a good deal of foul sputum in which, however, no tubercle bacilli had been found. On May 8, 1926, X ray examination of the chest had revealed hydatid cysts in the apices of both lungs. The results of the Casoni and complement fixation tests for hydatid had both been positive. On June 4, 1926, under intratracheal anaesthesia given under positive pressure the cyst on the left side had been opened and foul smelling pus evacuated. The cyst had communicated with a bronchus and had continued draining for five months because of the thickness of its adventitia, its size, the compression of the lung and the fixity of the upper part of the chest.

On November 26, 1925, a Sauerback's posterior thoracoplasty had been done and in four weeks closure had resulted. At the time of presentation he felt well, had put on a lot of weight and was working instead of drawing an invalid pension. He still had in the apical region of the right lung a quiescent hydatid, but on account of its

small size, its situation and the surrounding fibrosis no operative interference was contemplated.

Subtentorial Tumour.

Dr. R. P. McMEEKIN showed a female patient, aged fifteen years, who had been admitted to hospital on March 18, 1927. She had been well until five months previously, when she had begun to complain of drowsiness and frontal headache which had latterly become much more severe, frequently waking her up at night and sometimes being accompanied by pain down the back of the neck. Two months previously non-projectile vomiting which had no relation to meals and had latterly occurred several times a week especially when the headache was severe, had commenced. A little more than a month previously she had complained of diplopia which had recurred at intervals and had been present at the time of her admission. She had also noticed that her eyesight had been failing. She had occasionally complained of a sensation of pins and needles and numbness in the left thigh. There had been no fits, no muscular weakness and no twitches or spasms. At times when walking she had noticed a tendency to fall to the left. The appetite had been good and the bowels constipated. There had been no urinary symptoms.

On examination the temperature had been 36.7° C. (98° F.) and the pulse rate 84 in the minute. The systolic blood pressure had been 120 and the diastolic 74 millimetres of mercury. A careful examination of the chest, abdomen and urine had revealed nothing abnormal. There had been paresis of both external recti more pronounced on the right side. Ophthalmoscopic examination had revealed double papilloedema with four diopters of swelling in each disc. There had been nystagmus on looking to the right and to a lesser extent on looking to the left. The fields of vision had been normal, but during the first three weeks of her stay in hospital the acuity of vision had definitely diminished. The left plantar reflex had been extensor and the right although at first flexor, had later become extensor. The deep reflexes had all been elicited and had been equal on the two sides. The superficial abdominal reflexes could not be elicited. There had been slight tremor of the right hand and some incoordination of movement on the right side. Dysdiadochokinesis had been present on both sides, but particularly on the right. No loss of sensation or of muscular power had been detected. The Casoni test for hydatid had yielded no reaction. The blood had failed to react to the Wassermann test. Lumbar puncture had been repeatedly performed and no abnormality could be detected in the cerebro-spinal fluid. Because of the headache, the increase of the papilloedema and the diminution of the acuity of vision a subtentorial decompression had been done on April 11, 1927. After the operation a *hernia cerebri* had developed, but the headache had disappeared, the papilloedema had considerably diminished and the patient felt much better. The neurological signs, although still present, were not so pronounced as before. On May 12, 1927, one dose of deep X ray therapy had been given.

Dr. McMeekin pointed out that the occasional good result from a decompression, as in this case, was sufficient justification for the procedure.

Acromegaly.

Dr. McMeekin also showed a female, aged twenty-one years, who at the age of fourteen had been operated on for a goitre. Two and a half years previously she had noticed that her hands feet and lower jaw were getting larger and at the same time the menses had suddenly ceased. In the past two years she had put on 6.3 kilograms (one stone) in weight. She had previously worn size four in shoes, but now had to wear size seven. Twelve months previously she had commenced to have headaches which had latterly become persistent and associated with nausea but not vomiting. She had also noticed that her eyesight had begun to fail and she was unable to read or to recognize people. There had been definite giddiness and for the past seven months she had been unable to walk.

On inspection the lips had been thick, the lower jaw large, the nose flat and the facies of the Mongolian type.

The tongue was large and fissured and the voice husky. The pulse was regular and the rate 120 in the minute. The hands and feet were big and the fingers cylindrical in shape. The spine was kyphotic. On account of the poor vision and non-cooperation of the patient it had been impossible to determine accurately the visual fields, but to rough testing there had apparently been bitemporal hemianopia. There was some pallor of the temporal sides of the optic discs, but no papilloedema. There had been some loss of power in the limbs, but a full neurological examination had revealed no other signs. The blood had contained 0.14% of sugar. On light stroking of the skin the white line of Sargent had appeared. X ray examination of the skull had revealed much enlargement of the *sella turcica* and some pressure absorption of the convolutional markings of the skull. A skiagram of the fingers had revealed slight "tufting" of the terminal phalanges.

Ophthalmology.

Dr. LEONARD MITCHELL presented a number of patients illustrating common lesions of the optic disc and retina.

Radiology.

Dr. L. J. CLENDINEN showed a large number of very interesting and diverse skiagrams. He also presented about twenty patients illustrating the good results obtained by the use of radium and X ray therapy in the treatment of various kinds of malignant disease.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been reelected members of the New South Wales Branch of the British Medical Association:

- Ferguson, William John, M.B., Ch.M., 1919 (Univ. Sydney), Vauluse.
 Gillies, Henry Vickers, M.B., 1916, (Univ. Sydney), Ballina.
 Rutledge, Edward Hamilton, M.B., 1908 (Univ. Sydney), Prince of Wales Hospital, Randwick.
 Warren, Charles Frank, L.R.C.P. (London), 1894; L.S.A. (London), 1892; M.R.C.S. (England), 1894; 143, Macquarie Street, Sydney.
 Watson, Frederick Robert, L.R.C.P. (Edinburgh), L.R.C.S. (Edinburgh), L.R.F.P.S. (Glasgow), 1909; c.o. R. Barr Brown, Esquire, 30, Elizabeth Street, Sydney.

THE undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

- Baesen, Carl, M.B., Ch.M., 1926 (Univ. Sydney), Sydney Hospital, Sydney.
 Culey, Arthur Charles, M.B., Ch.M., 1926 (Univ. Sydney), Karella, Neirbo Avenue, Hurstville.
 Grainger, Francis Transvaal, M.B., Ch.M., 1925 (Univ. Sydney), 98, Gloucester Road, Hurstville.
 Lieberman, Hyman Barnett, M.B., Ch.M., 1926 (Univ. Sydney), 41, Darley Road, Randwick.
 Malthy, Reginald, M.B., Ch.M., 1925 (Univ. Sydney), 33, Redmyre Road, Strathfield.
 Marshman, Eric Ambrose Claude, M.B., Ch.M., 1926 (Univ. Sydney), Goulburn District Hospital.
 Unwin, Maurice Leslie, M.B., Ch.M., 1925 (Univ. Sydney), c.o. Mr. Atkins, Southwinds, Burrawong Avenue, Clifton Gardens.

Obituary.

PETER ANTHONY RICHARD LALOR.

WE regret to announce the death of Dr. Peter Anthony Richard Lalor which occurred at Sunbury, Victoria, on June 28, 1927.

WILLIAM FREDERICK TAYLOR.

We announce with regret the death of Dr. William Frederick Taylor which occurred at Enoggera, Queensland, on June 30, 1927.

EDWARD ALBERT OFFICER.

We regret to announce the death of Dr. Edward Albert Officer, of Perth, Western Australia.

NOTICE.

DR. CHARLES I. McLAREN, of the Department of Neurology and Psychiatry, of the Severance Union Medical College, Seoul, Korea, will deliver a lecture entitled "An Hypothesis Concerning the Relation of the Body and Mind" at the Queen's Hall, Melbourne, on Thursday, July 14, 1927, at 8 o'clock p.m. The chair will be taken by Dr. R. R. Stawell. Medical practitioners are invited to be present. No charge will be made for admission.

Books Received.

AN ILLUSTRATED KEY TO THE IDENTIFICATION OF THE ANOPHELINE LARVÆ OF INDIA, CEYLON AND MALAYA, WEST OF WALLACE'S LINE, WITH PRACTICAL NOTES ON THEIR COLLECTION, by C. Strickland, M.A., B.C. (Cantab.), and K. L. Choudhury, M.B., D.P.H. (Cal.), with a Foreword by Sir Ronald Ross, K.C.B., K.C.M.G., F.R.S.; 1927. Calcutta: Thacker, Spink and Company. Imp. 8vo., pp. 67. Price: Rs. 4/8.

CYSTOSCOPY: A THEORETICAL AND PRACTICAL HANDBOOK CONTAINING CHAPTERS ON SEPARATE RENAL FUNCTION AND PYELOGRAPHY, by James B. Macalpine, F.R.C.S. (England); 1927. Bristol: John Wright and Sons, Limited. Royal 8vo., pp. 300, with illustrations. Price: 25s. net.

Diary for the Month.

- JULY 12.—Tasmanian Branch, B.M.A.: Branch.
 JULY 12.—New South Wales Branch, B.M.A.: Ethics Committee.
 JULY 13.—Central Northern Medical Association, New South Wales.
 JULY 14.—Victorian Branch, B.M.A.: Council.
 JULY 14.—New South Wales Branch, B.M.A.: Clinical Meeting.
 JULY 18.—New South Wales Branch, B.M.A.: Organization and Science Committee.
 JULY 19.—Tasmanian Branch, B.M.A.: Council.
 JULY 19.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 JULY 20.—Western Australian Branch, B.M.A.: Branch.
 JULY 22.—Queensland Branch, B.M.A.: Council.
 JULY 22.—Eastern Suburbs Medical Association, New South Wales.
 JULY 26.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 JULY 26.—Illawarra Suburbs Medical Association, New South Wales.
 JULY 27.—Victorian Branch, B.M.A.: Council.

Medical Appointments.

Dr. Henry John Taylor (B.M.A.) has been appointed Acting Government Medical Officer at Townsville, Acting Health Officer for the purposes of *The Health Acts* 1900 to 1922 and Acting Medical Officer to the State Children Department, Townsville, Queensland.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xx.

SYDNEY HOSPITAL: Clinical Assistants (3).

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Hon- orary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Boomeroo Centre Medical Club.
WESTERN AUS- TRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON) DIVI- SION: Honorary Secretary, Wellin- gton.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to positions at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

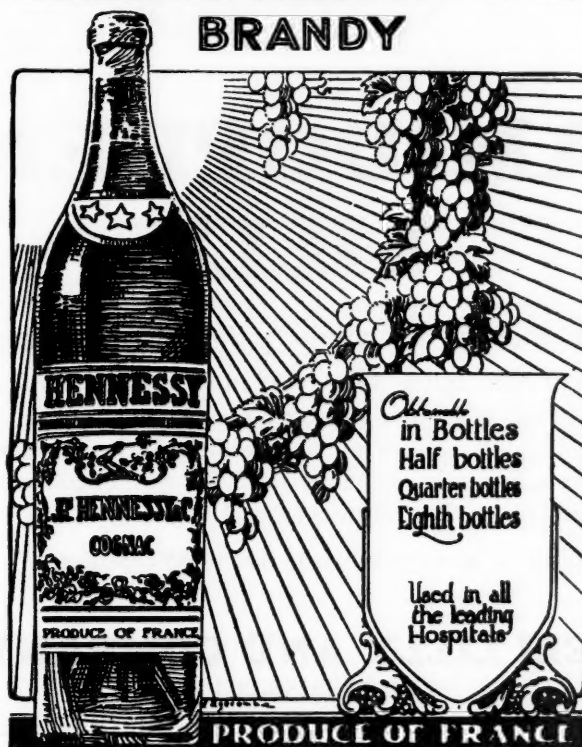
All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

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